SONY

3-759-981-21 (1)

Video Cassette Recorder

Operating Instructions

VHS

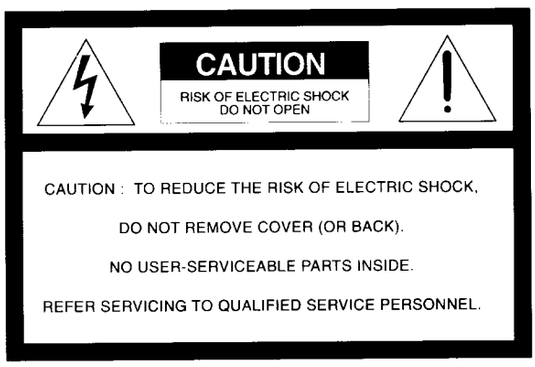
Hi-Fi

SLV-640HF

© 1994 by Sony Corporation

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION : TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

CAUTION

To prevent electric shock, do not use this polarized AC plug with an extension cord, receptacle or other outlet unless the blades can be fully inserted to prevent blade exposure.

Precautions

Safety

- Operate the unit only on 120V AC, 60 Hz.
- If anything falls into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- One blade of the plug is wider than the other for the purpose of safety and will fit into the power outlet only one way. If you are unable to insert the plug fully into the outlet, contact your Sony dealer.
- Unplug the unit from the wall outlet if you do not intend to use it for an extended period of time. To disconnect the cord, pull it out by the plug, never by the cord.

Installing

- Allow adequate air circulation to prevent internal heat buildup.
- Do not place the unit on surfaces (rugs, blankets, etc.) or near materials (curtains, draperies) that may block the ventilation slots.
- Do not install the unit near heat sources such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- Do not install the unit in an inclined position. It is designed to be operated in a horizontal position only.
- Keep the unit and cassettes away from equipment with strong magnets, such as microwave ovens or large loudspeakers.
- Do not place heavy objects on the unit.
- If the unit is brought directly from a cold to a warm location, moisture may condense inside the VCR and cause damage to the video head and tape. When you first install the unit, or when you move it from a cold to a warm location, wait for about one hour before operating the unit.

Information

For customers in the USA

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

Caution

Television programs, films, video tapes and other materials may be copyrighted. Unauthorized recording of such material may be contrary to the provisions of the copyright laws. Also, use of this recorder with cable television transmission may require authorization from the cable television transmission and/or program owner.

Owner's record

The model number is located at the rear and front of the unit and the serial number on the top. Record the serial number in the space provided below. Refer to them whenever you call upon your Sony dealer regarding this product.

Model No. SLV-640HF Serial No. _____

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back cover **Quick reference to using the VCR**

Welcome!

Thank you for purchasing the Sony Video Cassette Recorder (VCR). Here are some of the features you'll enjoy with your VCR:

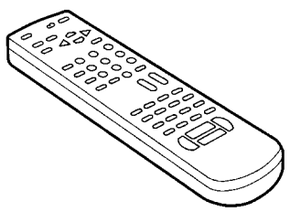
- Easy Set Up feature that presets channels easily using the EASY SET UP button
- On-screen menu that displays information in either English or French (Canadian model only)

Getting Started

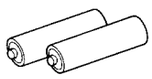
Step 1: Unpacking

Check that you have the following items:

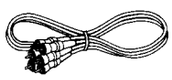
- **Remote commander**



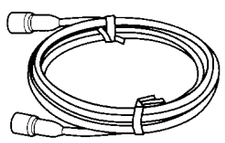
- **Size AA (R6) batteries**



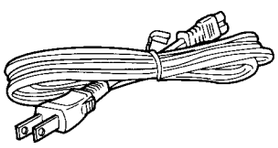
- **Audio/video cable (3-phono to 3-phono)**



- **75-ohm coaxial cable with F-type connectors**



- **AC power cord**



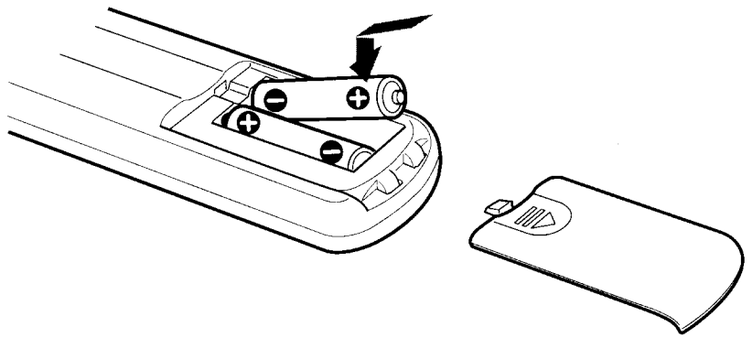
Step 2: Setting up the remote commander

Notes

- With normal use, the batteries should last for approximately three to six months.
- If you do not use the remote commander for an extended period of time, remove the batteries to avoid possible damage from battery leakage.
- Do not use a new battery with an old one.
- Do not use different types of batteries.

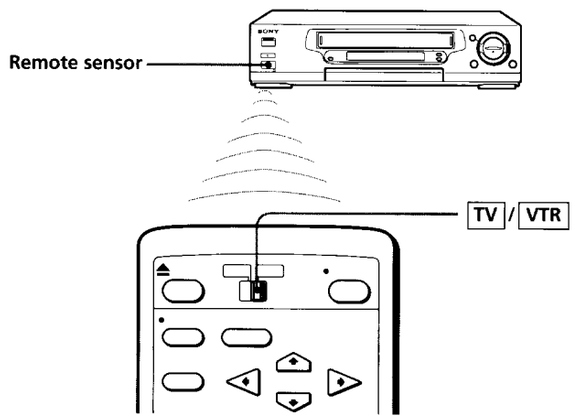
Inserting the batteries

Insert two size AA (R6) batteries by matching the + and – on the batteries to the diagram inside the battery compartment.



Using the remote commander

You can use this remote commander to operate this VCR and a Sony TV. The POWER, VOL +/–, CH +/–, TV/VTR, channel number, ENTER, DISPLAY and AUDIO MONITOR buttons on the remote commander can be used to operate your TV.



To operate	Set TV / VTR to
the VCR	VTR and point at the remote sensor on the VCR
a Sony TV	TV and point at the remote sensor on the TV

Step 3: Hookups

Caution
Connections between the VCR's VHF/UHF connector and the antenna terminals of the TV receiver should be made only as shown in the following instructions. Failure to do so may result in operation that violates the regulations of the Federal Communications Commission regarding the use and operation of RF devices. Never connect the output of the VCR to an antenna or make simultaneous (parallel) antenna and VCR connections at the antenna terminals of your receiver.

Note to CATV system installer
This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

Selecting the best hookup option

Before you can use your VCR for the first time, you need to connect it to your TV and set it up to receive programs for viewing and recording. This section explains how to hook up and set up your VCR so that you can start enjoying it right away. There are, however, many types of TVs available and many ways in which your TV can be hooked up. For these reasons, this manual describes several ways your VCR can be connected.

To hook up your VCR so that it works best for you, first scan through the table below. Then use the accompanying diagrams and procedures on the following pages to set up your VCR.

If you have	Use	Refer to
TV that has audio/video inputs	Audio/video (A/V) hookup, then follow one of the hookups below.	Page **7**
Cable box with many scrambled channels	Hookup1	Page **8**
No cable box or cable box with only a few scrambled channels	Hookup 2	Page **10**
Antenna only, no cable TV	Hookup 3	Page **12**
Cable box with only a few scrambled channels, using an A/B switch	Hookup 4	Page **14**

After you've completed the connections, follow the instructions for setup. During setup, if you need more details of the procedure described, page numbers are provided where you can find complete, step-by-step instructions.

After you've completed the setup, you're ready to use your VCR. Procedures differ depending on the hookup you used. For an overview, refer to "Quick reference to using the VCR" on the back cover.

Before you get started

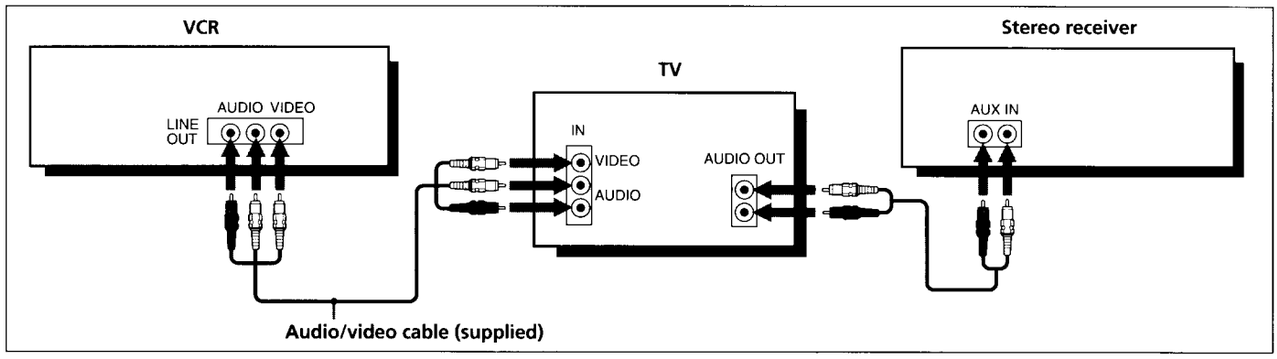
- Turn off the power to all equipment.
- Do not connect the AC power cords until all of the connections are completed.
- Be sure you make connections firmly. Loose connections may cause picture distortion.
- If your TV doesn't match any of the examples provided, see your nearest Sony dealer or qualified technician.

Audio/video (A/V) hookup

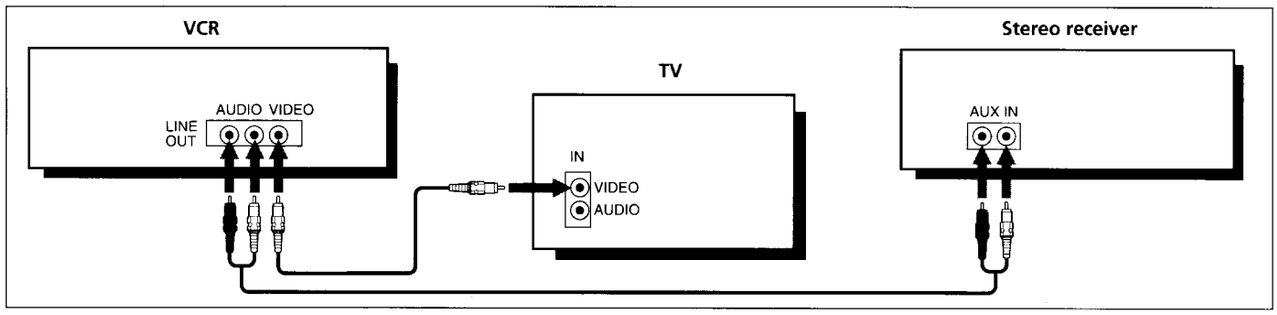
If your TV has audio/video (A/V) input jacks, you will get a better picture and sound if you hook up your VCR using these connections. In addition, for a true "home theater" experience, you should connect the audio outputs of your VCR or TV to your stereo system. If your TV doesn't have A/V inputs, see the following pages for antenna or cable hookups.

If you're planning to use your VCR only to play back pictures and movies, you're finished setting up the VCR after you've made these connections. If you want to record off-air or off your cable TV system, complete these connections first, and then go to the following pages for antenna or cable hookups.

A Use this hookup if your TV has stereo jacks



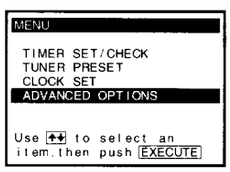
B Use this hookup if your TV doesn't have stereo jacks



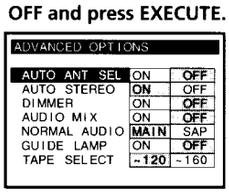
A/V hookup: VCR setup

After you've connected your TV and completed antenna or cable hookup, use the following procedure to set up the VCR.

Press MENU and select ADVANCED OPTIONS.



Set AUTO ANT SEL to OFF and press EXECUTE.



For details, see page 21.

Note

To play a tape in stereo, you must use the A/V connection.

Hookup 1

Cable box with many scrambled channels

Recommended use

Use this hookup if your cable company cannot supply a cable box that is compatible with the VCR's cable box control feature, and your cable system scrambles all, or most channels.

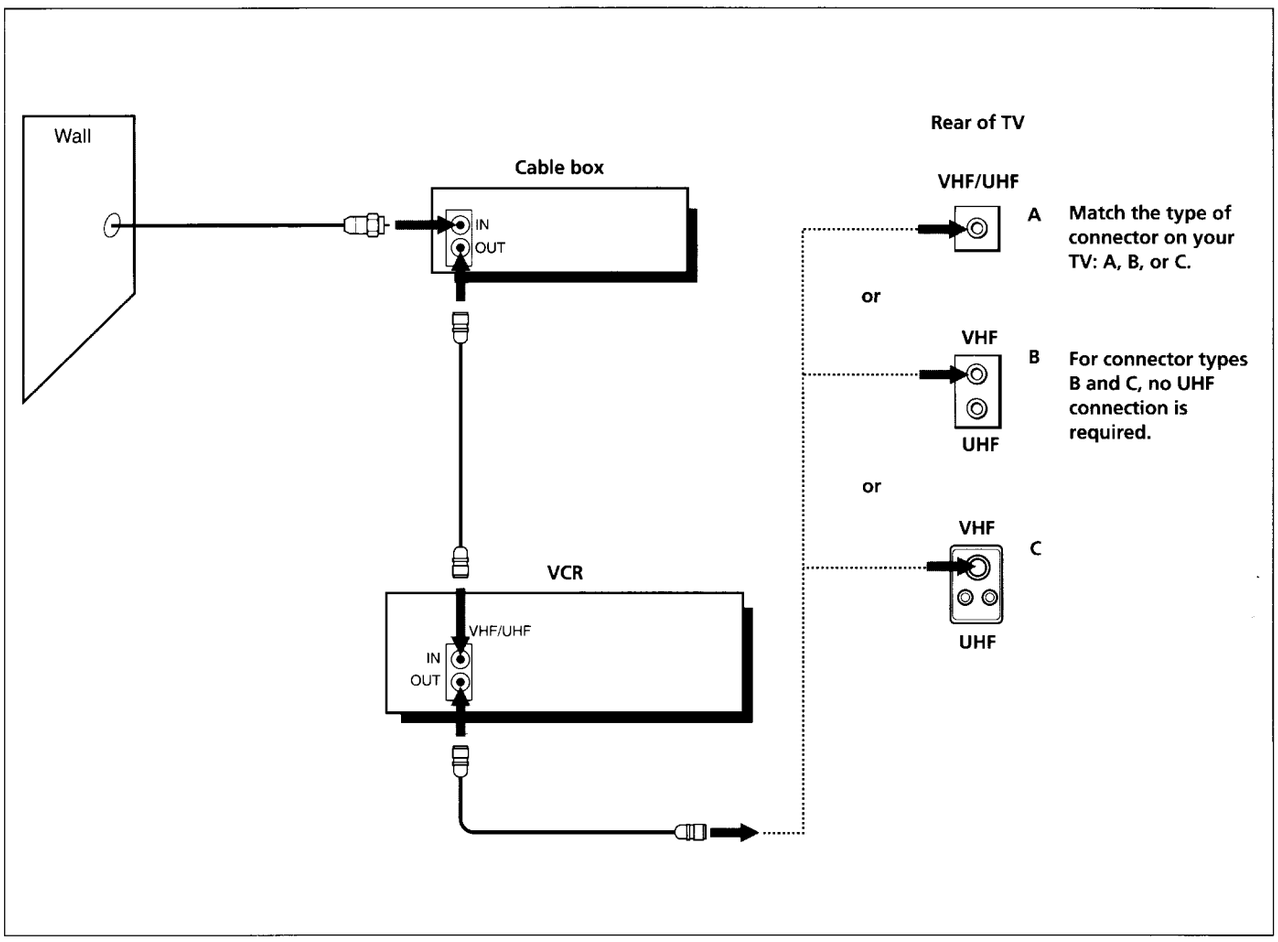
What you can and can't do with this hookup

What you can do

- Record any channel by selecting the channel on the cable box

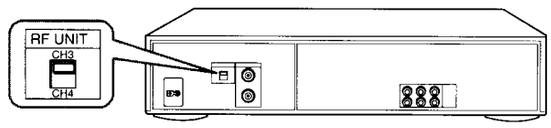
What you can't do

- Record with the cable box turned off
- Record one channel while watching another channel
- Record by selecting channels directly with the VCR



Hookup 1: VCR setup

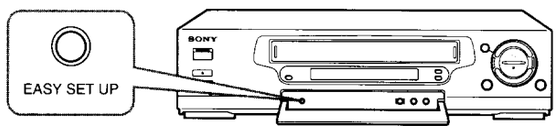
1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.
If you made A/V connections (from page **7**), you can skip this step.



For details, see page 40.

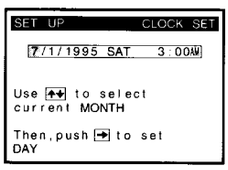
2 Turn on your cable box.

3 Press EASY SET UP on the VCR.
The SET UP menu appears.

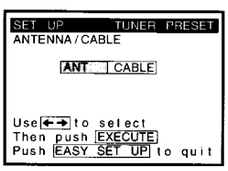


1 **(Canadian model only)**
The LANGUAGE menu appears. Change the on-screen language to French (FRANÇAIS) if desired, and press EXECUTE.
For details, see page 16.

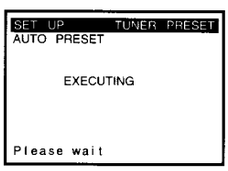
2 The CLOCK SET menu appears. Set the MONTH, DAY, YEAR, HOUR and MINUTES and press EXECUTE.
For details, see page 17.



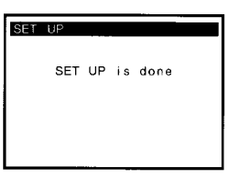
3 The TUNER PRESET menu appears. Set ANTENNA/CABLE to ANT and press EXECUTE.
For details, see page 18.



4 The AUTO PRESET starts.
For details, see page 18.



Normal display ←



You are now ready to use your VCR

A Quick reference to operations is provided on the back cover to help you quickly enjoy the basic functions. These procedures differ slightly depending on the hookup used. Make a note of which hookup you used (Hookup 1) so that you can always follow the correct instructions.

Hookup 2

No cable box or Cable box with only a few scrambled channels

Recommended use

Use this hookup if you do not have a cable box. Also use this hookup if your cable system scrambles only a few channels.

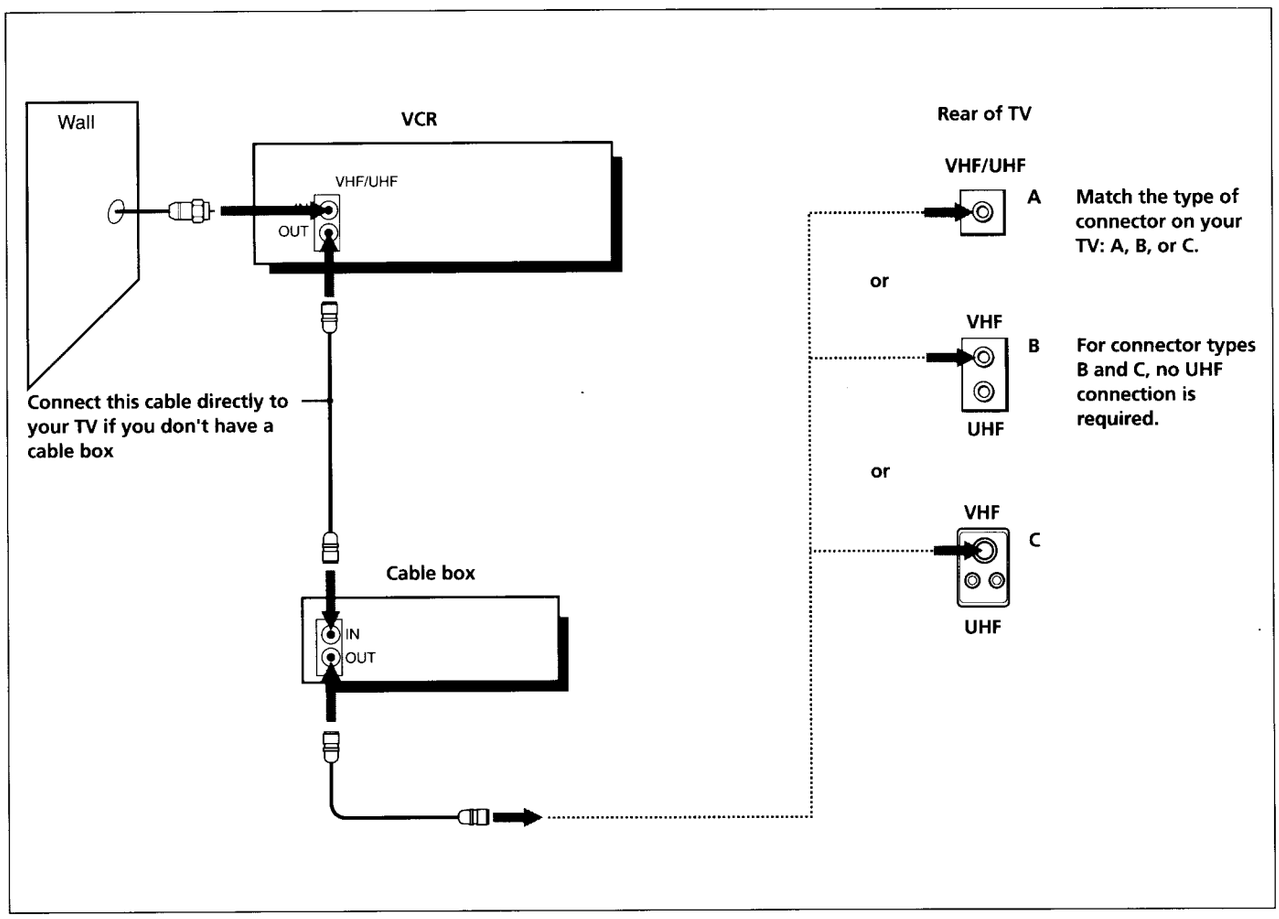
What you can and can't do with this hookup

What you can do

- Record any unscrambled channel by selecting the channel on the VCR

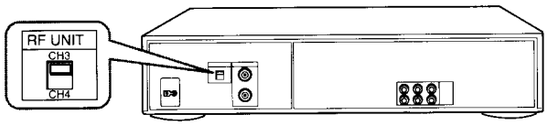
What you can't do

- Record scrambled channels that require a cable box



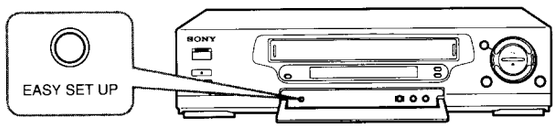
Hookup 2: VCR setup

1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.
If you made A/V connections (from page **7**), you can skip this step.



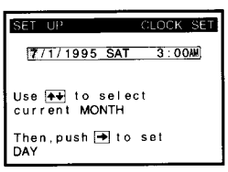
For details, see page 40.

2 Press EASY SET UP on the VCR.
The SET UP menu appears.

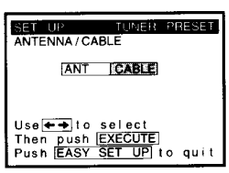


1 **(Canadian model only)**
The LANGUAGE menu appears. Change the on-screen language to French (FRANÇAIS) if desired, and press EXECUTE.
For details, see page 16.

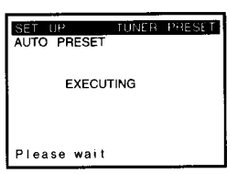
2 The CLOCK SET menu appears. Set the MONTH, DAY, YEAR, HOUR and MINUTES and press EXECUTE.
For details, see page 17.



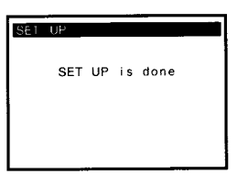
3 The TUNER PRESET menu appears. Set ANTENNA/CABLE to CABLE and press EXECUTE.
For details, see page 18.



4 The AUTO PRESET starts.
For details, see page 18.



Normal display ←



You are now ready to use your VCR

A Quick reference to operations is provided on the back cover to help you quickly enjoy the basic functions. These procedures differ slightly depending on the hookup used. Make a note of which hookup you used (Hookup 2) so that you can always follow the correct instructions.

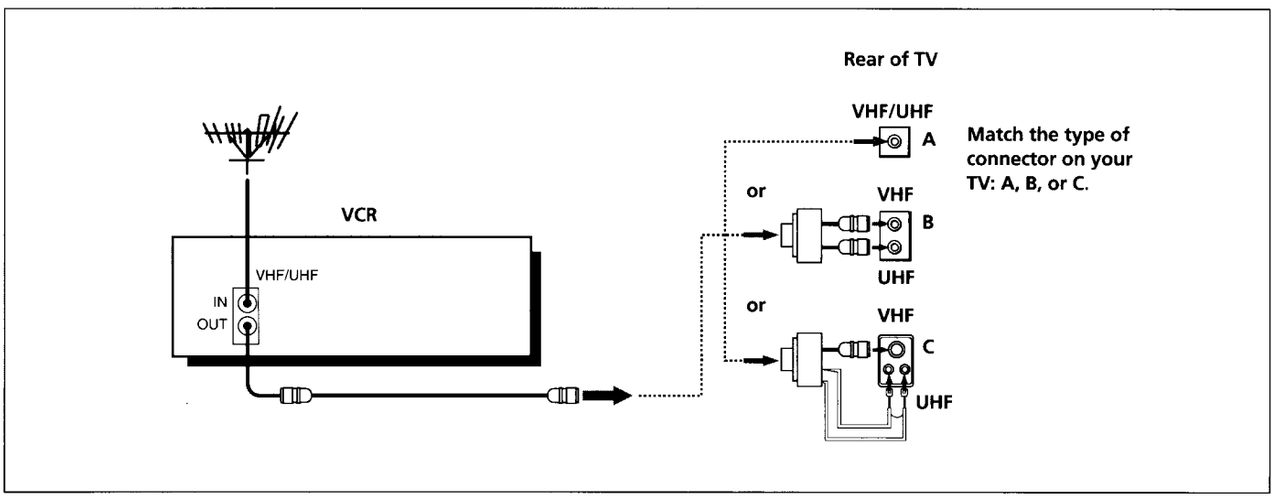
Hookup 3

Make the following connections if you're using an antenna (if you don't have cable TV).

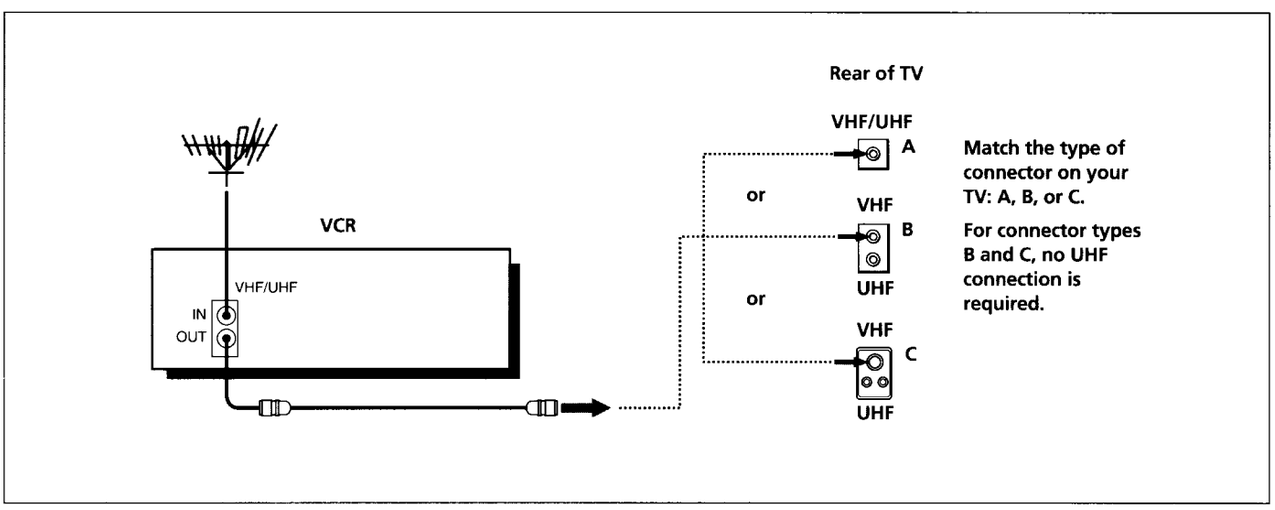
Antenna hookup

A Use this hookup if you're using:

- VHF/UHF antenna (you get channels 2-13 and channels 14 and higher)
- UHF-only antenna (you get channels 14 and higher)
- separate VHF and UHF antennas



B Use this hookup if you're using a VHF-only antenna (you get channels 2-13 only)

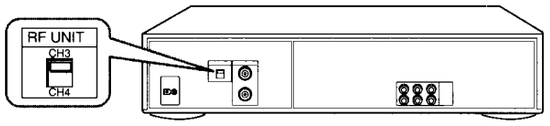


If you cannot connect your antenna cable to the VCR directly

If your antenna cable is a flat cable (300-ohm twin lead cable), attach an external antenna connector (not supplied) so that you can connect the cable to the VHF/UHF IN connector. If you have separate cables for VHF and UHF antennas, you may use a U/V band mixer (not supplied). For details, see page **40**.

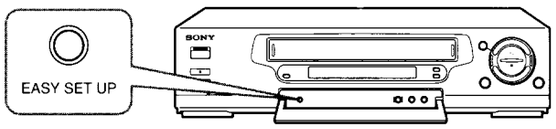
Hookup 3: VCR setup

1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.
If you made A/V connections (from page **7**), you can skip this step.



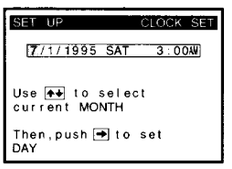
For details, see page 40.

2 Press EASY SET UP on the VCR.
The SET UP menu appears.

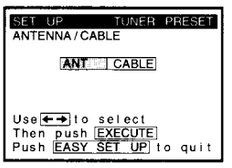


1 **(Canadian model only)**
The LANGUAGE menu appears. Change the on-screen language to French (FRANÇAIS) if desired, and press EXECUTE.
For details, see page 16.

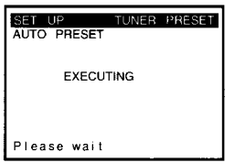
2 The CLOCK SET menu appears. Set the MONTH, DAY, YEAR, HOUR and MINUTES and press EXECUTE.
For details, see page 17.



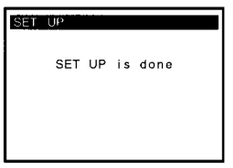
3 The TUNER PRESET menu appears. Set ANTENNA/CABLE to ANT and press EXECUTE.
For details, see page 18.



4 The AUTO PRESET starts.
For details, see page 18.



Normal display ←



You are now ready to use your VCR

A Quick reference to operations is provided on the back cover to help you quickly enjoy the basic functions. These procedures differ slightly depending on the hookup used. Make a note of which hookup you used (Hookup 3) so that you can always follow the correct instructions.

Hookup 4

Cable box with only a few scrambled channels, using an A/B switch

Recommended use

By using an A/B switch (not supplied), this hookup allows you to easily record both scrambled and unscrambled channels. With the A/B switch set to position "A," you can record unscrambled channels by selecting channels directly with the VCR. You only use position "B" and the cable box to record a scrambled channel.

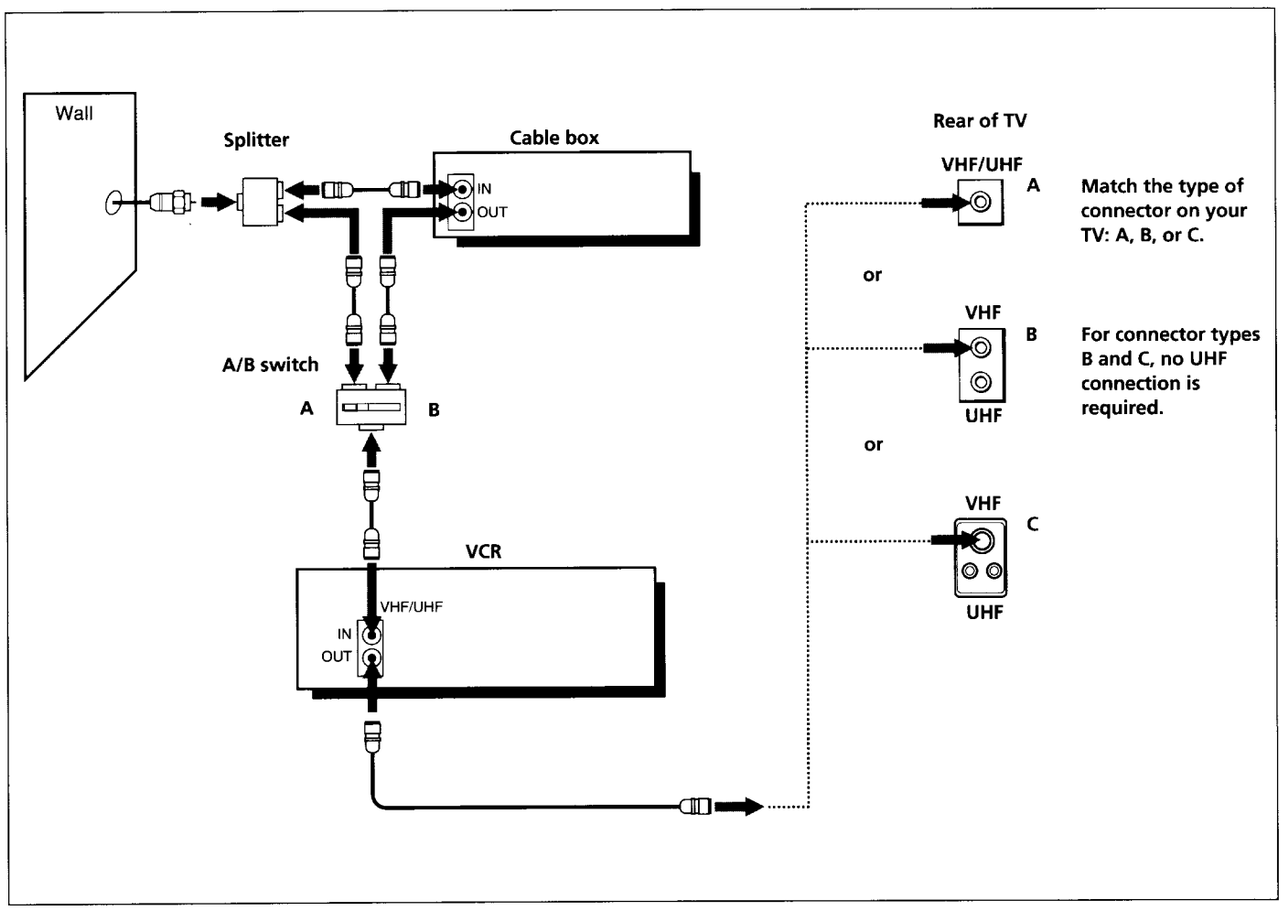
What you can and can't do with this hookup

What you can do

- Record any unscrambled channel by selecting the channel directly with your VCR (the A/B switch is set to A)
- Record any scrambled channel by selecting the channel on the cable box (the A/B switch is set to B)

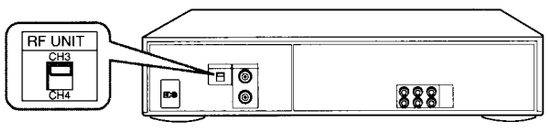
What you can't do

- Record one channel while watching another channel



Hookup 4: VCR setup

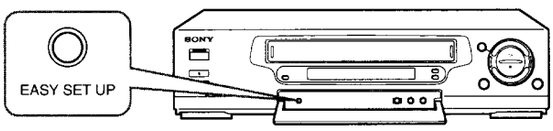
1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.
If you made A/V connections (from page **7**), you can skip this step.



For details, see page 40.

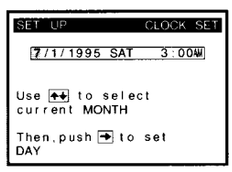
2 Set the A/B switch to "A."

3 Press EASY SET UP on the VCR.
The SET UP menu appears.

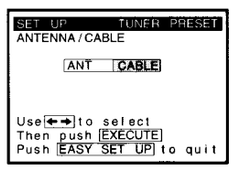


1 **(Canadian model only)**
The LANGUAGE menu appears. Change the on-screen language to French (FRANÇAIS) if desired, and press EXECUTE.
For details, see page 16.

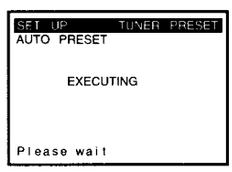
2 The CLOCK SET menu appears. Set the MONTH, DAY, YEAR, HOUR and MINUTES and press EXECUTE.
For details, see page 17.

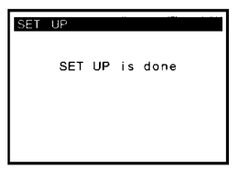


3 The TUNER PRESET menu appears. Set ANTENNA/CABLE to CABLE and press EXECUTE.
For details, see page 18.



4 The AUTO PRESET starts.
For details, see page 18.

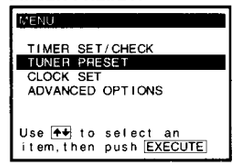




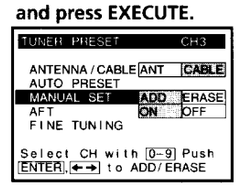
Normal display ←

4 Preset the cable box output channel (usually 2, 3, or 4).

Press MENU and select TUNER PRESET.



Set MANUAL SET to ADD and press EXECUTE.



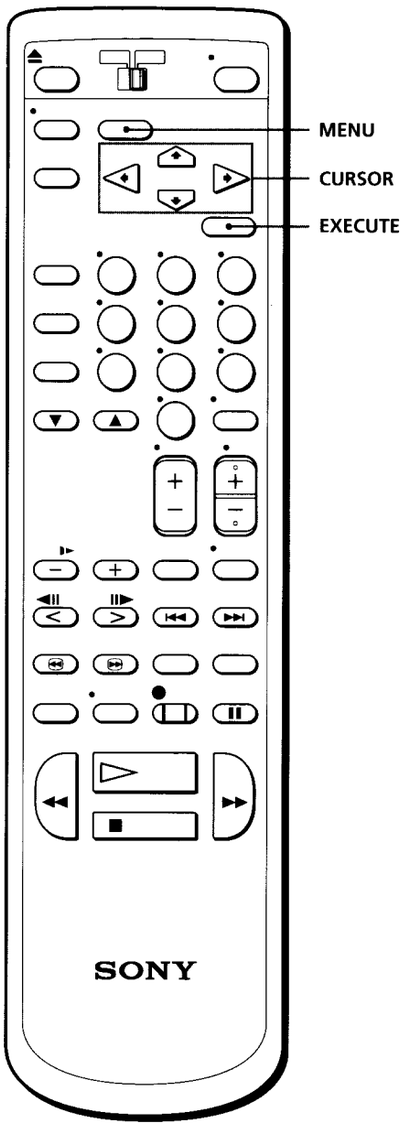
For details, see page 18.

You are now ready to use your VCR

A Quick reference to operations is provided on the back cover to help you quickly enjoy the basic functions. These procedures differ slightly depending on the hookup used. Make a note of which hookup you used (Hookup 4) so that you can always follow the correct instructions.

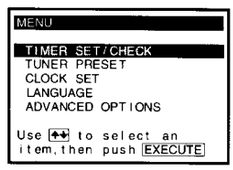
Selecting a language

(Canadian model only)

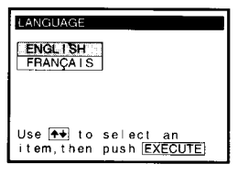


If you prefer French to English, you can change the on-screen display language.
When you set up your VCR for the first time, you can select the on-screen display language using the EASY SET UP button (pages **9,11,13** and **15**). You can also change the language using the menu.

1 **Press MENU.**
The main MENU appears on the TV screen.

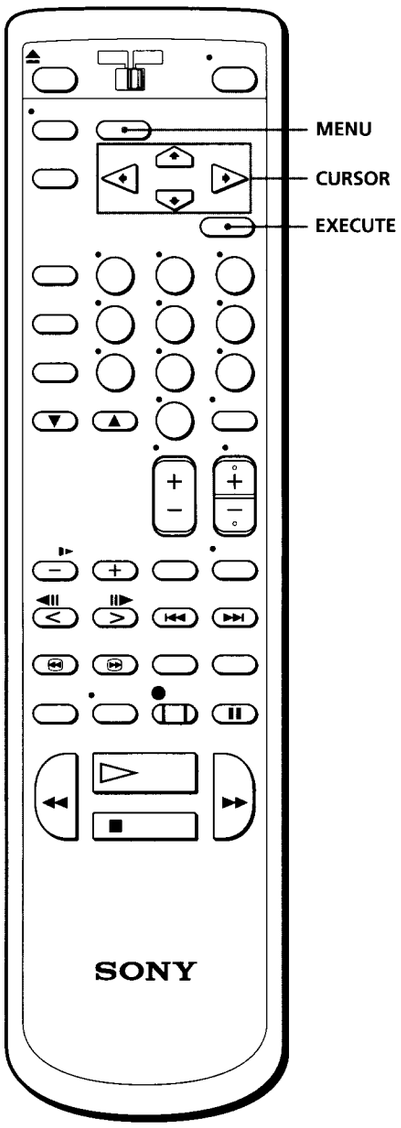


2 **Press the CURSOR (↑/↓) buttons to move the cursor (I) to LANGUAGE, then press EXECUTE.**
The LANGUAGE menu appears on the TV screen.



3 **Using the CURSOR (↑/↓) buttons, select ENGLISH or FRANÇAIS, then press EXECUTE.**

Setting the clock

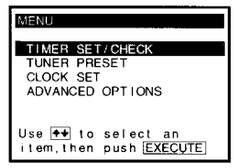


Note

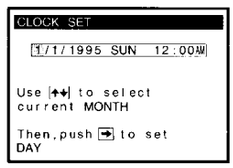
- The menu disappears automatically if you don't proceed for more than a few minutes.

Set the time and date to use the timer feature for recording programs. When you set up your VCR for the first time, you can set the clock using the EASY SET UP button (pages **9**, **11**, **13** and **15**). You can also set the clock using the menu.

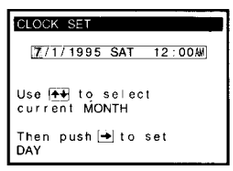
1 **Press MENU.**
The main MENU appears on the TV screen.



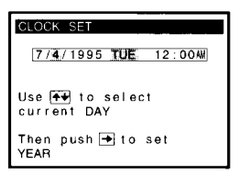
2 **Press the CURSOR (↑/↓) buttons to move the cursor (I) to CLOCK SET, then press EXECUTE.**



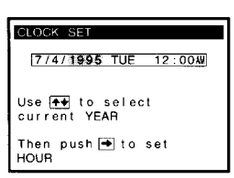
3 **Set the month using the CURSOR (↑/↓) buttons.**



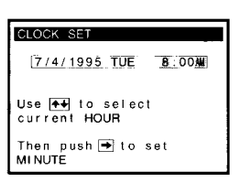
4 **Press CURSOR → to highlight the day. Set the day using the CURSOR (↑/↓) buttons.**
The day of the week is set automatically.



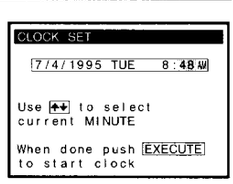
5 **Press CURSOR → to highlight the year. Set the year using the CURSOR (↑/↓) buttons.**



6 **Press CURSOR → to highlight the hour. Set the hour using the CURSOR (↑/↓) buttons.**



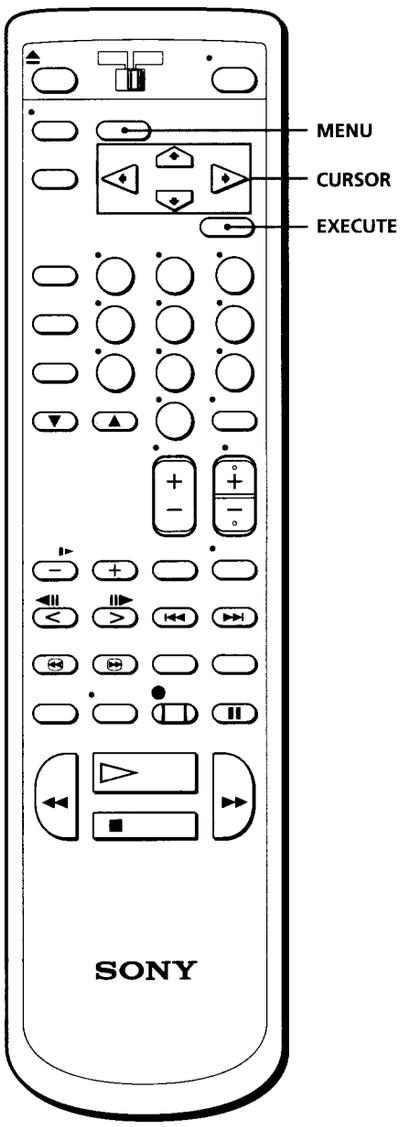
7 **Press CURSOR → to highlight the minutes. Set the minutes using the CURSOR (↑/↓) buttons.**



8 **Press EXECUTE to start the clock.**

Presetting channels

(Skip this section if you are using cable box control.)



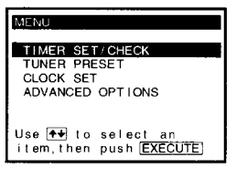
This VCR is capable of receiving VHF channels 2 to 13, UHF channels 14 to 69 and unscrambled CABLE channels 1 to 125. First, we recommend that you preset the receivable channels in your area using automatic presetting. Then, if there are any unwanted channels, disable them manually. If you have decided which channels you wish to preset, set them directly using manual presetting.
When you set up your VCR for the first time, you can preset the channels using the EASY SET UP button (pages **9**, **11**, **13** and **15**). You can also preset the channels using the menu.

Before you start...

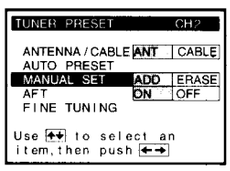
- Turn on the VCR and the TV.
- Set the TV to the VCR channel (channel 3 or 4). If your TV is connected to the VCR using A/V connections, set the TV to video input.
- Press TV/VTR to display the VTR indicator in the VCR's display window.
- Press INPUT SELECT so that a channel number appears in the VCR's display window.

Presetting all receivable channels automatically

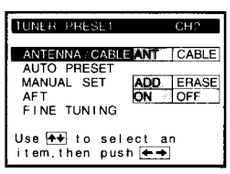
1 **Press MENU.**
The main MENU appears on the TV screen.



2 **Press the CURSOR (↑/↓) buttons to move the cursor (I) to TUNER PRESET, then press EXECUTE.**
The TUNER PRESET menu appears on the TV screen.



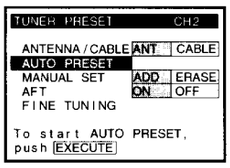
3 **Press the CURSOR (↑/↓) buttons to move the cursor (I) to ANTENNA/ CABLE.**



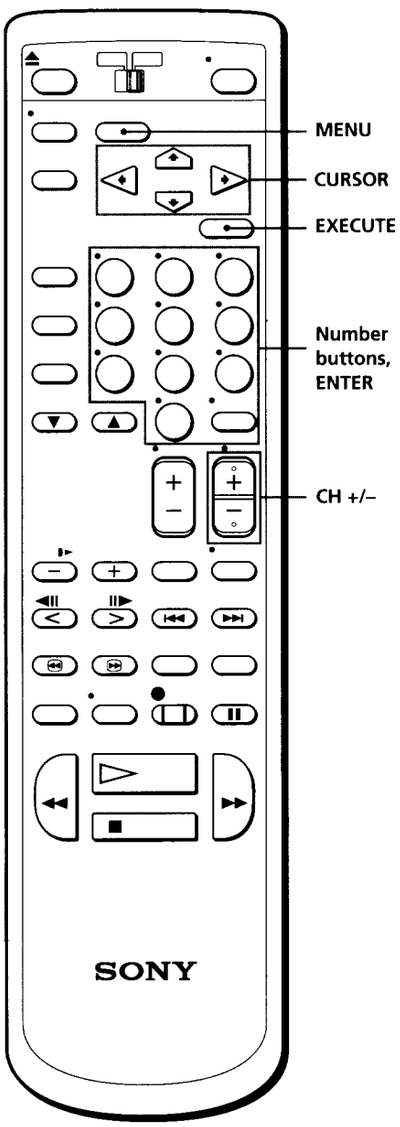
4 **Select ANT or CABLE using the CURSOR (←/→) buttons:**

- To preset cable TV channels, select CABLE.
- To preset VHF and UHF channels, select ANT.

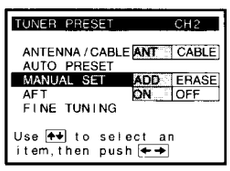
5 **Press the CURSOR (↑/↓) buttons to move the cursor (▮) to AUTO PRESET, then press EXECUTE.**
All receivable channels are preset in numerical sequence. When no more receivable channels can be found, presetting stops and the picture from the lowest numbered channel is displayed on the TV screen.



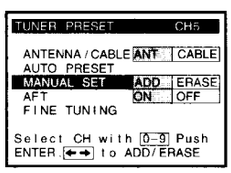
Presetting/disabling channels manually



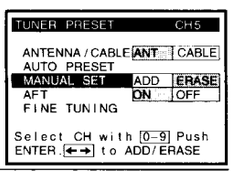
1 **Display the TUNER PRESET menu.**
For instructions, follow steps **1** and **2** in "Presetting all receivable channels automatically."


TUNER PRESET CH2
ANTENNA / CABLE ANT CABLE
AUTO PRESET
MANUAL SET ADD ERASE
AFT ON OFF
FINE TUNING
Use ↑↓ to select an item, then push ←→

2 **Select the channel to preset or disable:**
- To preset a channel, enter the channel number by pressing the number buttons then ENTER.
- To disable a channel, select the channel number by pressing CH +/–.


TUNER PRESET CH5
ANTENNA / CABLE ANT CABLE
AUTO PRESET
MANUAL SET ADD ERASE
AFT ON OFF
FINE TUNING
Select CH with 0–9 Push ENTER ←→ to ADD/ERASE

3 **Set MANUAL to ADD or ERASE, using the CURSOR (←/→) buttons:**
- To preset a channel, select ADD.
- To disable a channel, select ERASE.


TUNER PRESET CH5
ANTENNA / CABLE ANT CABLE
AUTO PRESET
MANUAL SET ADD ERASE
AFT ON OFF
FINE TUNING
Select CH with 0–9 Push ENTER ←→ to ADD/ERASE

4 **Repeat steps 2 and 3 to preset or disable channels as required, then press EXECUTE.**

Cable TV channel assignment

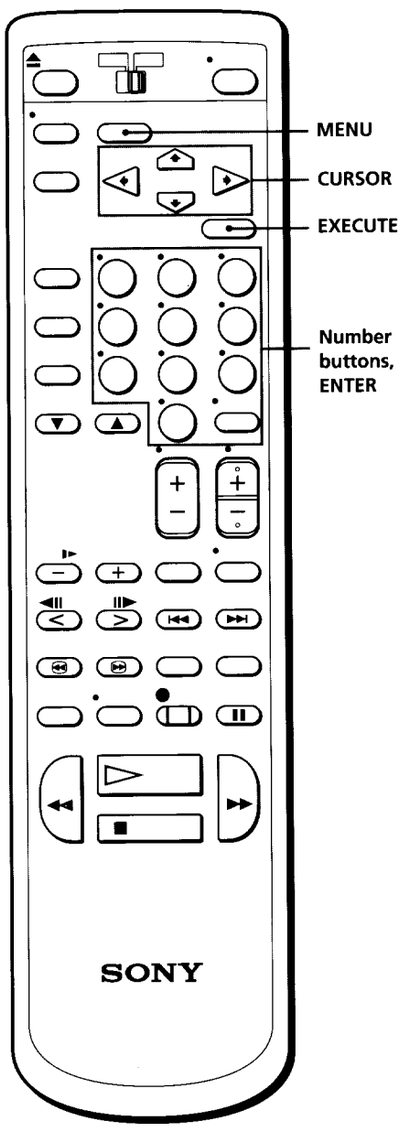
Cable TV systems use letters or numerals to designate channels. This VCR is designed to correspond with standard cable systems. The chart below shows the channel numbers on this VCR and the corresponding cable TV channels. Note that the channel number assignment shown in the chart may not correspond to the channel number used by your local cable company. Check with your local cable TV company for more information on the available channels.

Number on this VCR	*1*	*2*	*3*	...	*12*	*13*	*14*	*15*	*16*	*17*
Cable TV channel	A-8	2	3	...	12	13	A	B	C	D

18	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*	*31*
E	F	G	H	I	J	K	L	M	N	O	P	Q	R

32	*33*	*34*	*35*	*36*	*37*	*38*	...	*93*	*94*	*95*	*96*	*97*	*98*
S	T	U	V	W	W+1	W+2	...	W+57	W+58	A-5	A-4	A-3	A-2

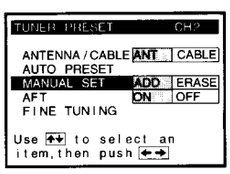
99	*100*	*101*	...	*124*	*125*
A-1	W+59	W+60	...	W+83	W+84



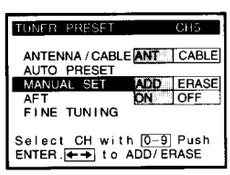
If the picture is not clear

Normally, the Auto Fine Tuning (AFT) function automatically tunes in channels clearly. If, however, the picture of a channel is not clear, you may also use the manual tuning function.

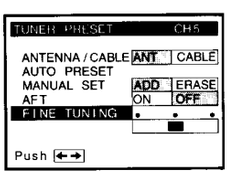
1 **Display the TUNER PRESET menu.**
For instructions, follow steps **1** and **2** in "Presetting all receivable channels automatically."


TUNER PRESET CH2
ANTENNA / CABLE ANT CABLE
AUTO PRESET
MANUAL SET ADD ERASE
AFT ON OFF
FINE TUNING
Use ↑↓ to select an item, then push ←→

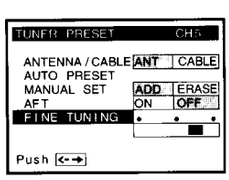
2 **Select the channel you want to fine-tune by pressing the number buttons and then ENTER.**


TUNER PRESET CH5
ANTENNA / CABLE ANT CABLE
AUTO PRESET
MANUAL SET ADD ERASE
AFT ON OFF
FINE TUNING
Select CH with 0-9 Push ENTER. ←→ to ADD/ERASE

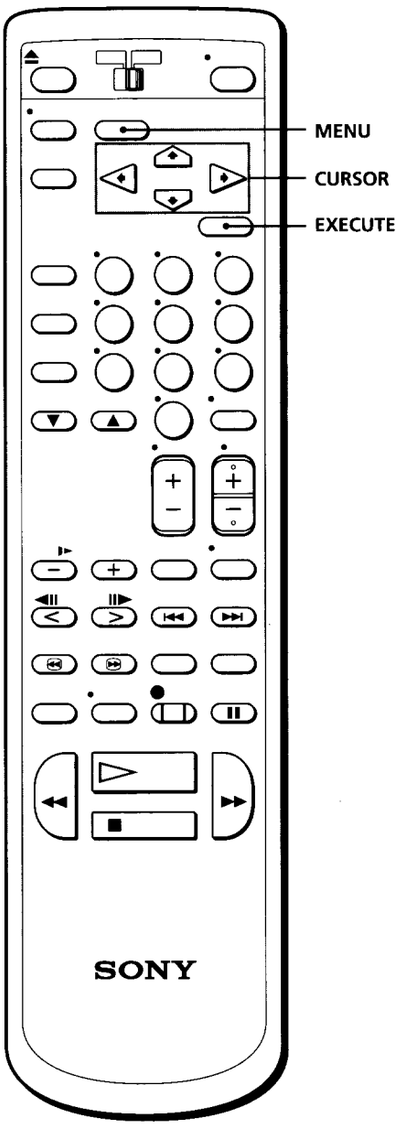
3 **Press the CURSOR (↑/↓) buttons to move the cursor (I) to FINE TUNING.**
The fine tuning meter appears.



4 **Press the CURSOR (←/→) buttons to get a clearer picture, then press EXECUTE.**
Note that the AFT setting switches to OFF.

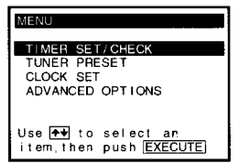


Using the ADVANCED OPTIONS

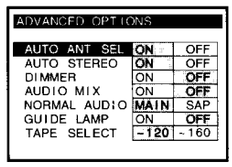


The ADVANCED OPTIONS menu allows you to make a number of optional setup choices. For a list of menu choices, see the table on page **22**.

1 **Press MENU.**
The main MENU appears on the TV screen.



2 **Press the CURSOR (↑/↓) buttons to move the cursor (I) to ADVANCED OPTIONS, then press EXECUTE.**
The ADVANCED OPTIONS appears on the TV screen.



3 **Press the CURSOR (↑/↓) buttons to move the cursor (I) to the desired menu choice.**

4 **Set the item to the desired setting using the CURSOR (←/→) buttons.**

5 **Press EXECUTE to return to the original screen.**

Using the ADVANCED OPTIONS (continued)

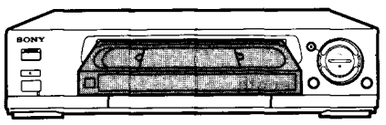
Menu choices

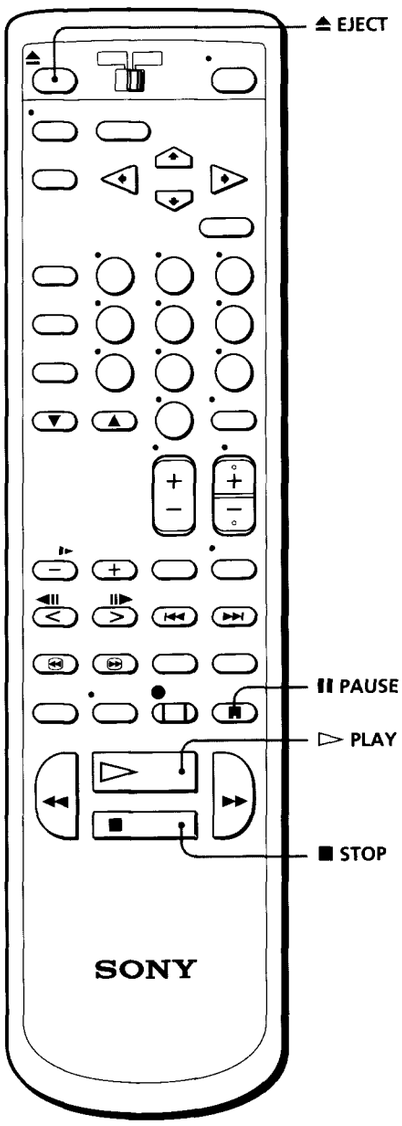
Initial settings are indicated in bold letters.

Menu option	Set this option to
AUTO ANT SEL	• **ON** if your TV is connected only to VHF/UHF OUT on the VCR. To play a tape, set the TV to the VCR channel (channel 3 or 4). • OFF if your TV is connected to both VHF/UHF OUT and LINE OUT on the VCR. To play a tape, set the TV to the VCR input.
AUTO STEREO	• **ON** to receive stereo programs. • OFF to reduce noise in a stereo program. Although the sound may improve, the sound becomes monaural. For details, see page **28**.
DIMMER	• ON to make the display window dim. • **OFF** to make it brighter.
AUDIO MIX	• ON to listen to the sound recorded on the hi-fi audio track and the normal audio track simultaneously. The AUDIO MONITOR button becomes inoperative. • **OFF** to select the sound using the AUDIO MONITOR button. For details, see page **25**.
NORMAL AUDIO	• **MAIN** to record the main sound on both the hi-fi and normal audio tracks. • SAP to record the SAP (Second Audio Program) sound on the normal audio track. The main sound is recorded on the hi-fi audio track. For details, see page **28**.
GUIDE LAMP	• ON to illuminate the borders of the dual mode shuttle ring and the buttons on the VCR which you can operate in the present condition, telling you what you can do with your VCR. • **OFF** to turn them off.
TAPE SELECT	• "**~120**" or "~160" to select the length of the tape, allowing to display the remaining tape length. For details, see page **24**.

Basic Operations

Playing a tape





This section shows you how to play back a video tape.

1 **Turn on your TV and tune in to the VCR:**

- If the TV is connected to the VCR using the audio/video cable, set the TV to video input.
- If the TV is connected to the VCR using only the antenna cable, set the TV to the channel for the VCR.

2 **Insert a tape.**

The VCR turns on automatically. The tape starts playing automatically if its safety tab has been removed.

3 **Press ▷ PLAY to start playing.**

When the tape reaches the end, the VCR automatically rewinds it to the beginning. (The power remains on.)

Additional tasks

To	Press
Stop play	■ STOP
Pause play	II PAUSE
Resume play after pause	II PAUSE or ▷ PLAY
Search forward	▶▶ FF or ⏩ SEARCH during playback
Search backward	◀◀ REW or ⏪ SEARCH during playback
Fast-forward the tape	▶▶ FF during stop
Rewind the tape	◀◀ REW during stop
Eject the tape	⏏ EJECT

Tip

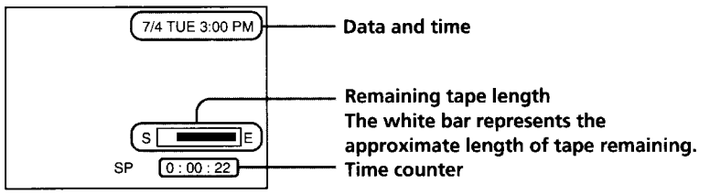
- For further information on searching and playback functions, see "Playing/ searching at various speeds" on page **35**.

Note

- Tapes recorded in LP mode can be played on this VCR, while playback picture quality in modes other than normal forward speed is not guaranteed.

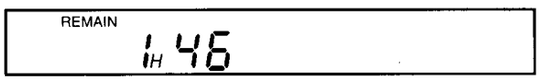
Displaying the date and time, remaining tape length and time counter

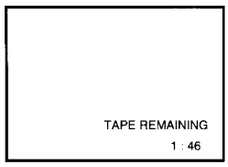
Press DISPLAY to turn the display on or off.



Displaying the remaining tape counter

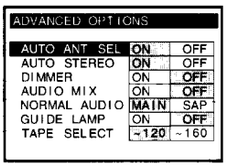
Press COUNTER/REMAIN to display the remaining tape counter in the display window. To display it on the TV screen, press DISPLAY to turn the display on, then press COUNTER/REMAIN. Each time you press COUNTER/REMAIN, the time counter and the remaining tape counter appear alternately.



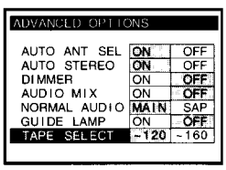


When you use a tape with more than 2-hour recording, select "~120" or "~160" from the menu.

1 Press MENU and select ADVANCED OPTIONS.



2 Set TAPE SELECT to "~120" or "~160" using the CURSOR (↑/↓/←/→) buttons.



3 Press EXECUTE to store the setting.

Notes

- When you insert a tape with a short tape length such as T-20, T-30 or a non-standard commercially available tape, the remaining tape length may not be correct.
- The display will not appear during still mode or slow-motion playback.

Notes

- When a tape is reinserted, the counter returns to "0H00M00S."
- The counter will not work on tape portions with no recording.

Using the time counter

At the point on a tape that you want to find later, press COUNTER RESET to reset the counter to "0H00M00S." When you rewind or advance the tape to this point, refer to the counter.

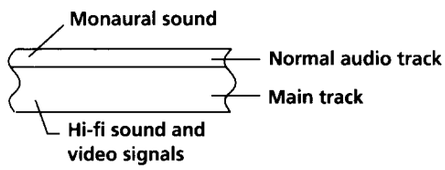
Playing stereo and bilingual programs

Press AUDIO MONITOR to select the desired sound. Each press of the button changes the display on the VCR.

To listen to a		VCR's display window
Stereo tape	**Bilingual tape**	
Stereo	Left and right channels	STEREO
Left channel	Left channel	L
Right channel	Right channel	R
Monaural on normal audio track	Sound on normal audio track (SAP)	No indicator appears

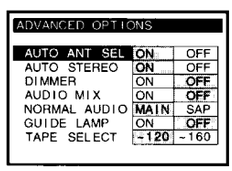
How sound is recorded on a video tape

This VCR records sound onto two different tracks. High-fidelity sound (usually stereo) is recorded onto the main track along with the picture. Monaural sound is recorded onto the normal audio track along the edge of the tape.

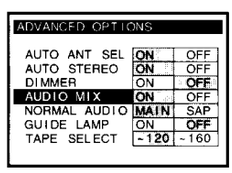


To listen to hi-fi and normal audio at the same time

1 Press MENU and select ADVANCED OPTIONS.



2 Set AUDIO MIX to ON using the CURSOR (↑/↓/←/→) buttons.
The AUDIO MONITOR button becomes inoperative, and the sound you hear is mixed.



3 Press EXECUTE to store the setting.
After playing the tape, reset AUDIO MIX to OFF.

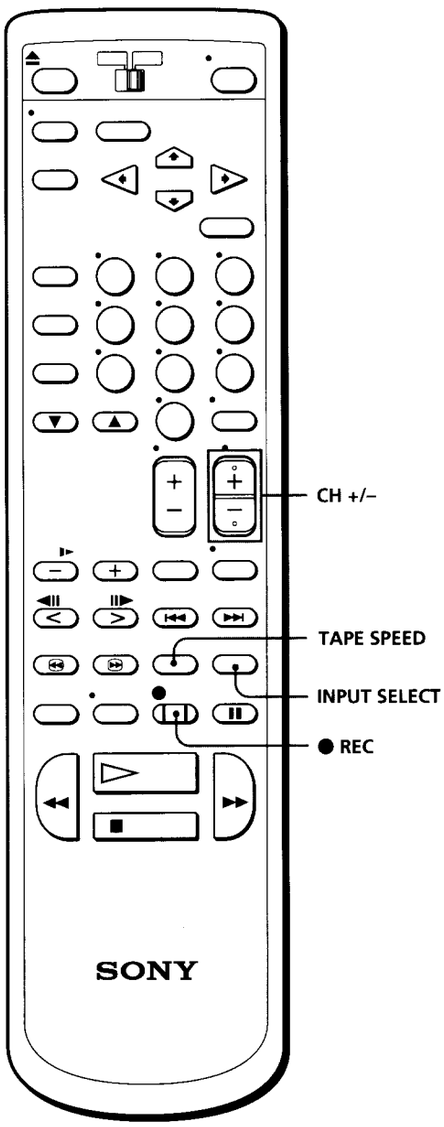
Notes

- When you play a tape recorded in monaural, the sound is heard in monaural regardless of the AUDIO MONITOR setting.
- To play a tape in stereo, you must use the A/V connection.
- If AUDIO MIX in the ADVANCED OPTIONS is set to ON, the AUDIO MONITOR button doesn't work.

Note

- If AUDIO MIX remains ON, the AUDIO MONITOR button remains inoperative.

Recording TV programs



Note

- If you insert a tape with its safety tab removed, the VCR starts playing. To record on this tape, cover the tab hole.

Tip

- To select channels, you can also use the number buttons on the remote commander. Enter the desired channel number using the number buttons, then press ENTER.

This section shows you how to record TV programs in the most basic way: manual recording. With manual recording, you start the VCR recording when the program begins, then stop it when the program ends. The VCR also provides the following ways of recording.

- Manually start recording, then stop it automatically—"Recording using the quick timer" (page **27**)
- Automatically start and stop recording—"Recording TV programs using the timer" (page **30**)

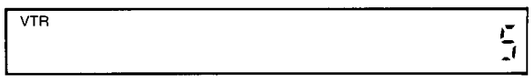
1 **Turn on your TV and tune in to the VCR:**

- If the TV is connected to the VCR using the audio/video cable, set the TV to video input.
- If the TV is connected to the VCR using only the antenna cable, set the TV to the channel for the VCR.

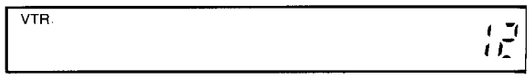
When using a cable box, turn it on.

2 **Insert a tape with its safety tab in place.**

3 **Press INPUT SELECT until a channel number appears in the VCR's display window.**

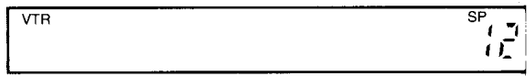


4 **Select the desired channel by pressing CH +/–.**



5 **Select the tape speed, SP or EP, by pressing TAPE SPEED.**

See "To select tape speeds" on the following page.



6 **Start recording by pressing ● REC .**

When the tape reaches the end, the VCR automatically rewinds it to the beginning.

Tips

- The display appears on the TV screen indicating information about the tape, but the information will not be recorded on the tape.
- If you don't want to watch TV while recording, you can turn off the TV. When using a cable box, make sure to leave it on.

Note

- If you've inserted a tape with its safety tab removed, the VCR ejects it when you press ● REC.

To stop recording

Press ■ STOP.

To select tape speeds

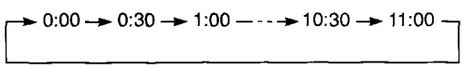
When recording, select either SP or EP. EP provides recording time three times as long as SP. However, SP provides better picture quality. You can mix SP and EP on the same tape. When playing back, the VCR automatically detects the tape speed. See the table below for the maximum recording/playback time in each speed.

Tape type	Maximum recording/playback time	
	SP	EP
T-160	2 hrs. 40 min.	8 hrs.
T-120	2 hrs.	6 hrs.
T-60	1 hr.	3 hrs.
T-30	30 min.	1 hr. 30 min.

Recording using the quick timer

The quick timer enables you to record for a specified period of time in intervals of 30 minutes. Once you specify the recording time, the VCR automatically stops recording. Before you begin, check that the clock is set correctly.

After you start recording, press QUICK TIMER until the desired duration appears in the display window. The TIMER indicator on the VCR lights up. Each press increases the recording duration in increments of 30 minutes as shown below.



The recording duration decreases minute by minute to 0:00, then the VCR turns off automatically.

To stop recording

Press ■ STOP.

To extend the recording duration while recording

Press QUICK TIMER until the desired duration appears in the display window.

Watching a TV program while recording another

You can watch a TV program and record another at the same time.

1 Press TV/VTR to turn off the VTR indicator in the display window.
2 If the TV is connected to the VCR using the audio/video cable, set the TV to TV input.
If the TV is connected to the VCR using only the antenna cable, skip this step.
3 Select the desired channel on the TV.

Recording stereo and bilingual programs

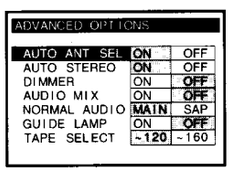
Stereo programs

This VCR automatically records stereo programs in stereo. When stereo programs are received, the STEREO indicator on the VCR lights up. If noise occurs while receiving a stereo program, record the program in monaural. Follow the steps below.

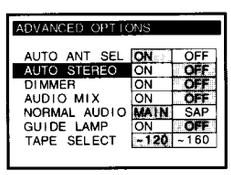
Bilingual programs

Normally, this VCR records main sound on both main and normal audio tracks. To record SAP (Second Audio Program) sound on normal audio track, follow the steps below.

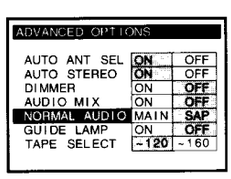
1 Press MENU and select ADVANCED OPTIONS.



2 • To record stereo programs in monaural:
Set AUTO STEREO to OFF using the CURSOR (↑/↓/←/→) buttons.



• To record SAP sound on normal audio track:
Set NORMAL AUDIO to SAP using the CURSOR (↑/↓/←/→) buttons.



3 Press EXECUTE to store the setting.

Tip

- For information on how the VCR records sound, see "How sound is recorded on a video tape" on page **25**.

Note

- Set NORMAL AUDIO to MAIN when not recording SAP sound, or no sound is recorded on the normal audio track. If no sound is recorded on the normal audio track and you play the tape on a mono VCR, you will see only video—no audio will be heard. However, you will receive both audio and video if you play back this tape on a stereo VCR.

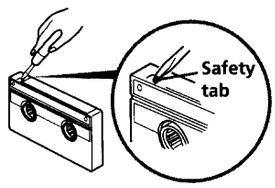
To monitor SAP sound while recording

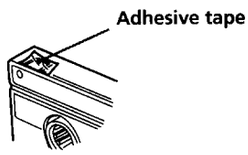
Press AUDIO MONITOR until the SAP indicator lights up in the display window.

Saving a recording

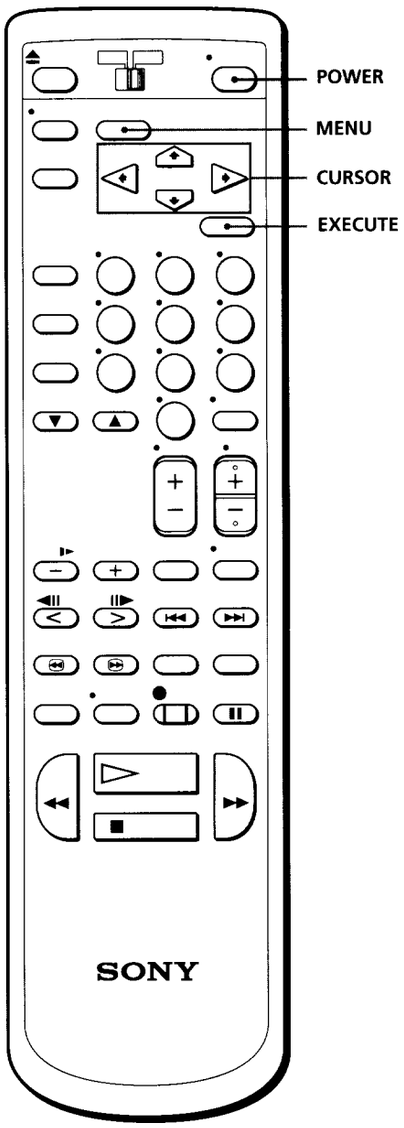
Video tapes have a safety tab to protect against accidental recording. To prevent accidental erasure of a recording, break off the safety tab with a screwdriver or other tool. A tape with its safety tab removed ejects if you try to record on it.

To record on a tape with its safety tab removed, cover the tab hole with adhesive tape.





Recording TV programs using the timer



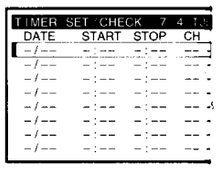
This section shows you how to let the VCR automatically start and stop recording TV programs. You can preset up to eight programs within a one month time frame.

Before you start...

- Check that the clock is set correctly.
- Insert a tape with its safety tab in place. Make sure the tape is longer than the total recording time.
- Turn on your TV and tune in to the VCR. When using a cable box, turn it on.

1 Press MENU and select TIMER SET/ CHECK.

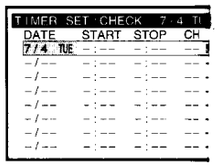
If the clock needs to be set, "Please set the clock" appears on the screen and the VCR automatically enters the clock setting mode.

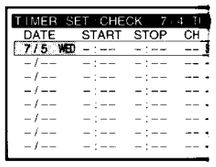


2 Set the date to start recording:

1 Press CURSOR ➡.
Make sure today's date is highlighted. If it isn't, reset the clock to the correct time.

2 Press CURSOR ⬆ to set the month and date.
The day of the week is set automatically.



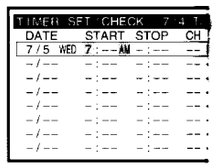


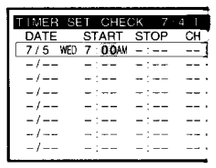
To record the same program every day or the same day once a week, see "Daily/ weekly recording" on page **32**.

3 Set the time to start recording:

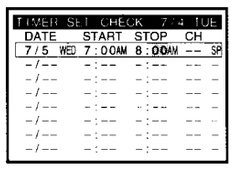
1 Press CURSOR ➡ to highlight the hour under "START," then press the CURSOR (⬆/⬇) buttons to set the hour.

2 Press CURSOR ➡ to highlight the minutes under "START," then press the CURSOR (⬆/⬇) buttons to set the minutes.



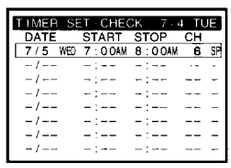


4 **Press CURSOR →, then set the time to stop recording in the same way.**



5 **Press CURSOR →, then press the CURSOR (↑/↓) buttons to select the channel you want to record.**

Only the channels preset in the VCR will appear. When using a cable box, the cable box channels appear.

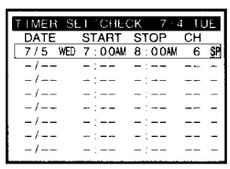


Tips

- To set the channel, you can also use CH +/– or number buttons.
- To record a video source from the LINE IN jacks, press INPUT SELECT to display "LINE" in the "CH" position.

6 **Press CURSOR →, then press the CURSOR (↑/↓) buttons to select the tape speed, SP or EP.**

See "To select tape speeds" on page **27**.



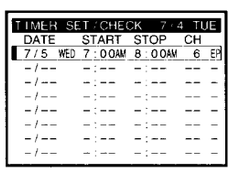
Tip

- To set the recording tape speed, you can also use TAPE SPEED.

7 **To confirm your program, press CURSOR →.**

All the settings stop being highlighted and the cursor (▮) appears in the leftmost column.

To preset another timer setting, move the cursor to the next line using CURSOR ↓ and repeat steps **2** to **7**.



Tip

- To change or correct a setting before confirming it, press CURSOR ← to highlight the item you want to change and reset it.

8 **After making the desired timer settings, press EXECUTE.**

9 **Press POWER to turn off the VCR.**

The TIMER indicator on the VCR lights up and the VCR stands by for recording. When using a cable box, leave it on. The VCR automatically turns on and starts recording at the preset start time, and turns off at the preset stop time.

To stop recording while recording

Press ■ STOP.

To use the VCR while recording

You can do the following tasks during timer recording.

To	Press
Reset the counter to "0H00M00S"	COUNTER RESET
Display tape information on the TV screen	DISPLAY
Check the timer settings	MENU and select TIMER SET/CHECK
Watch another TV program	TV/VTR (See "Watching a TV program while recording another" on page **28**.)

Using the VCR before timer recording begins

Press POWER to turn on the VCR. The TIMER indicator on the VCR goes off and the VCR is ready for use.

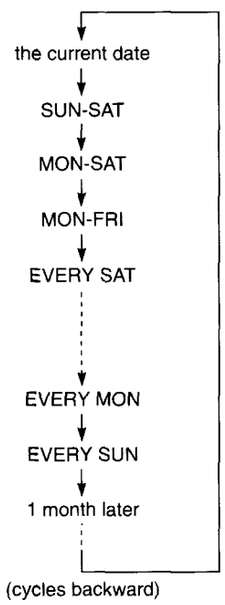
After using the VCR, turn off the VCR again to turn on the TIMER indicator on the VCR. When using a cable box, leave it on. Remember to turn off the VCR before the time you've set the VCR to start recording, or the timer setting will be cancelled.

Daily/weekly recording

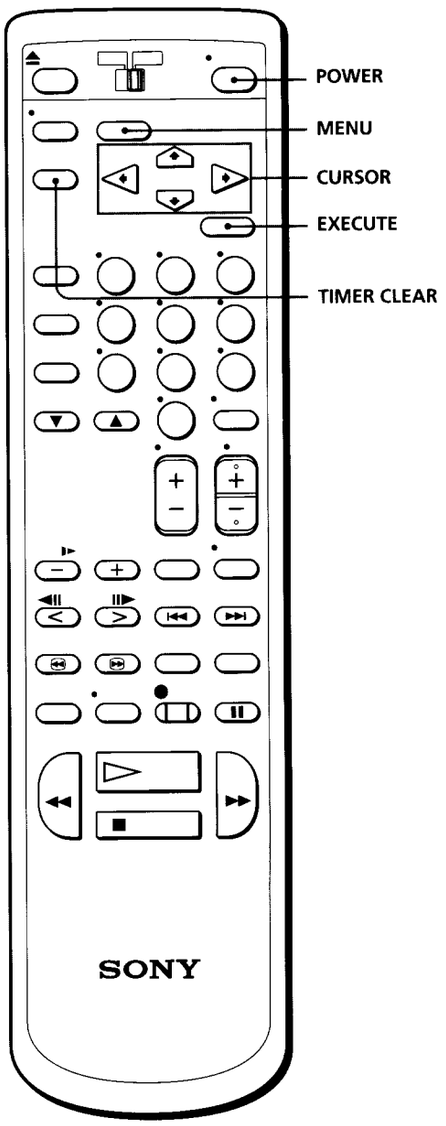
Daily recording records the same program every day of the week; weekly recording records the same program on the same day, every week.

When you set the date to start recording in step **2** of "Recording TV programs using the timer," press CURSOR ↓ until the desired day appears. Each time you press the button, the indication changes as shown on the left.

Daily/weekly recording



Checking/changing/ cancelling timer settings



This section shows you how to check, change and cancel the timer settings after you've stored them in the VCR.

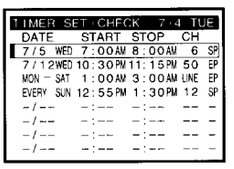
Before you start...

- Turn on your TV and tune in to the VCR.

1 **Press POWER to turn on the VCR.**

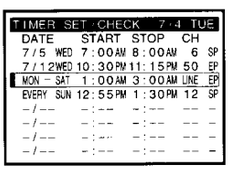
The TIMER indicator on the VCR goes off.

2 **Press MENU and select TIMER SET/ CHECK.**


TIMER SET:CHECK 7/4 TUE
DATE START STOP CH
7/5 WED 7:00AM 8:00AM 6 SP
7/12WED 10:30PM 11:15PM 50 EP
MON – SAT 1:00AM 3:00AM LINE EP
EVERY SUN 12:55PM 1:30PM 12 SP
-/-- -:-- -:-- -- -
-/-- -:-- -:-- -- -
-/-- -:-- -:-- -- -
-/-- -:-- -:-- -- -

3 **Check the timer settings:**

- If you do not want to change or cancel the settings, press EXECUTE, then turn the VCR off to return to recording standby.
- If you want to change or cancel the settings, press the CURSOR (↑/↓) buttons to move the cursor (▮) to the setting you want to change or cancel.


TIMER SET:CHECK 7/4 TUE
DATE START STOP CH
7/5 WED 7:00AM 8:00AM 6 SP
7/12WED 10:30PM 11:15PM 50 EP
MON – SAT 1:00AM 3:00AM LINE EP
EVERY SUN 12:55PM 1:30PM 12 SP
-/-- -:-- -:-- -- -
-/-- -:-- -:-- -- -
-/-- -:-- -:-- -- -
-/-- -:-- -:-- -- -

4 **Change or cancel the timer setting:**

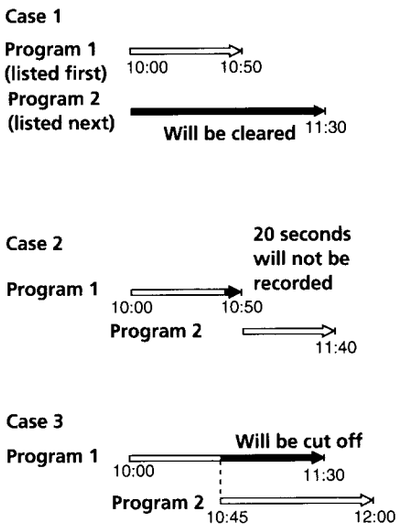
- To change the setting, press the CURSOR (←/→) buttons to highlight the item you want to change, and reset it using the CURSOR (↑/↓) buttons. Then, press CURSOR → to move the cursor to the leftmost column.
- To cancel the setting, press TIMER CLEAR.

5 **Press EXECUTE.**

The VCR returns to the original screen. When there are any other timer settings left in the TIMER SET/CHECK menu, turn off the VCR to return to recording standby.

To check the timer settings during timer recording

Press MENU and select TIMER SET/CHECK. After checking, press MENU to turn off the display.



When the timer settings overlap

The VCR will not record overlapping programs. If any of your timer settings overlap, change the settings.

Case 1: ***If you preset two programs to start recording at the same time...***

The program listed first in the TIMER SET/CHECK menu has priority over the other program. The timer setting of the lower priority program will be erased from the TIMER SET/CHECK menu when the first program begins recording.

Case 2: ***If you preset program 2 to start recording at the same time you preset program 1 to finish recording...***

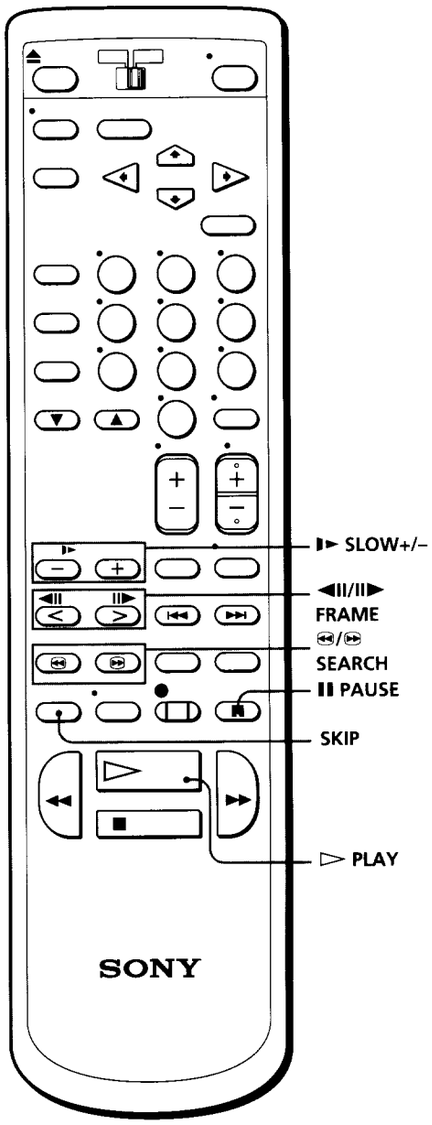
The last 20 seconds of program 1 will not be recorded because the VCR will enter recording pause for program 2 before program 1 is finished.

Case 3: ***If you preset program 2 to start recording before program 1 is finished recording...***

Program 2 will start recording before program 1 has finished.

Additional Operations

Playing/searching at various speeds



You can play back a tape at various speeds: high-speed, slow motion, frame by frame and so on. These options are also useful for searching for a specific point during playback. The sound is muted during these operations.

Playback options	Operation	To resume normal playback
Playing at twice the normal speed	During playback or pause, press ×2	Press ▷ PLAY.
Fast-forwarding/Rewinding	During stop, press ▶▶ FF or ◀◀ REW	Press ▷ PLAY.
Viewing the picture during fast-forward or rewind	During fast-forward, keep pressing ▶▶ FF. During rewind, keep pressing ◀◀ REW.	To return to the previous mode, release the button.
Locking in a high-speed picture	During playback or pause, press ⏩ SEARCH or ⏪ SEARCH . To change direction, press ◄II FRAME (backward) or II► FRAME (forward).	Press ▷ PLAY.
Locking in a slow-motion picture	During playback or pause, press I► SLOW+/–. You can increase the playback speed with the + button and decrease the speed with the – button. To change direction, press ◄II FRAME (backward) or II► FRAME (forward).	Press ▷ PLAY.
Playing frame by frame	During pause, press II► FRAME to advance the picture one frame or ◄II FRAME to reverse the picture one frame. Keep pressing the button to advance or reverse one frame every one second.	Press ▷ PLAY.
Skipping a scene	During playback, press SKIP. Pressing once skips about 30 seconds.	The VCR automatically resumes normal playback.
Rewind and automatically restart play	During stop, press ▷ PLAY on the VCR while pressing ◀◀ REW on the VCR.	——

Tip

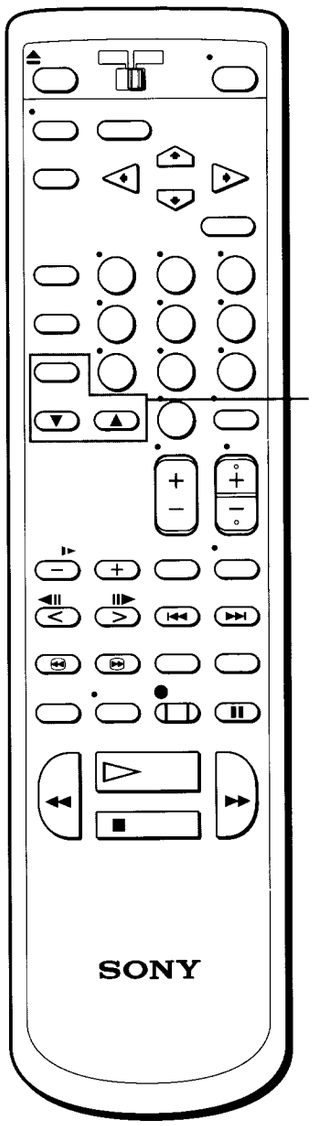
- Adjust the picture using the ▼/▲TRACKING NORMAL/SLOW STILL ADJUST buttons if:
  - Streaks appear while playing in slow motion.
  - Bands appear on the top or bottom while pausing.
  - The picture shakes while pausing.

Note

- Tapes recorded in LP mode can be played on this VCR, while playback picture quality in modes other than normal forward speed is not guaranteed.

Adjusting the picture

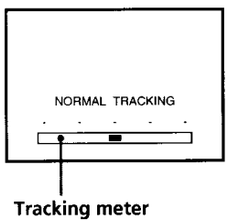
The VCR automatically adjusts the picture for the best possible playback or recording. If, however, you find the automatic adjustment unsatisfactory, you can adjust the picture manually.



Adjusting the tracking

Though the VCR automatically adjusts the tracking when playing a tape (the AUTO TRACKING indicator flashes in the display window, then lights steadily), distortion may occur if the tape was recorded in poor condition. If so, manually adjust the tracking condition.

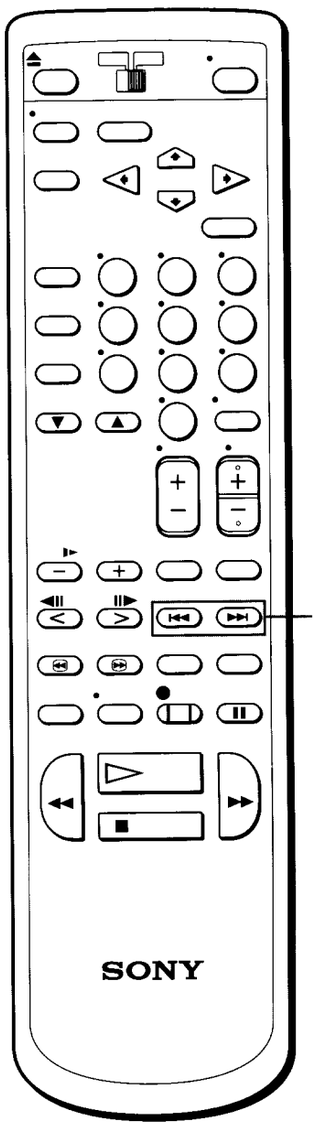
Press the ▼/▲ TRACKING NORMAL/SLOW buttons to display the tracking meter. The distortion should disappear as you press one of the two buttons. If you cannot get a clear picture with manual adjustment, press TRACKING AUTO/MANUAL to return to automatic adjustment.



Note

- Auto tracking adjustment is not possible for tapes recorded in LP mode.

Searching using the index function



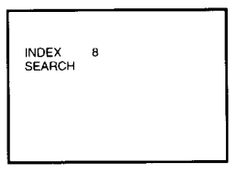
The VCR automatically marks an index signal at the point where recording starts (with the exception of when you start recording from recording pause). Use this as a reference to find the beginning of the recording. Since the index number indicates the relative position from the current position, specify how many index signals ahead or behind the specific index signal is from the current position. The VCR can search up to 99 index signals ahead or behind of the current position.

1 **Insert an indexed tape into the VCR.**

2 **Press the I◄◄/►►I INDEX SEARCH buttons repeatedly until the index number you want appears on the TV screen:**

- To locate succeeding programs, press ►►I INDEX SEARCH.
- To locate preceding programs, press I◄◄ INDEX SEARCH.

The VCR starts searching and the index number on the TV screen counts down to zero. Playback starts automatically from that point.



Editing with another VCR

This section shows you how to edit to or from another VCR or camcorder. You can make a copy of a tape using this VCR for recordi or playback.

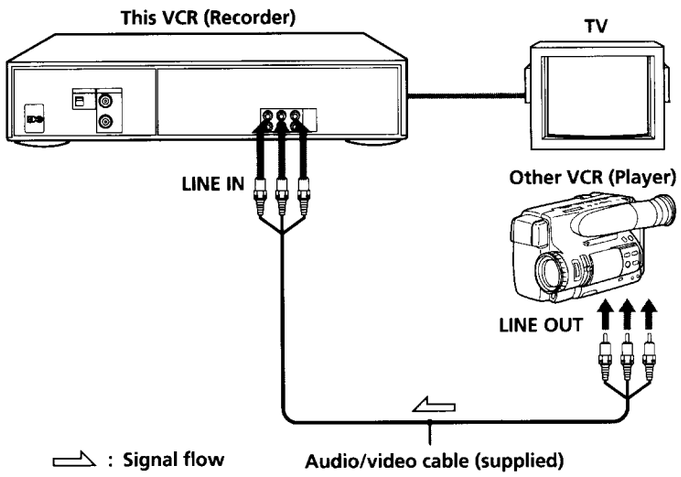
Tips

- Make sure you connect the plugs to jacks of the same color.
- If the other VCR is a monaural type, leave the red plugs unconnected.

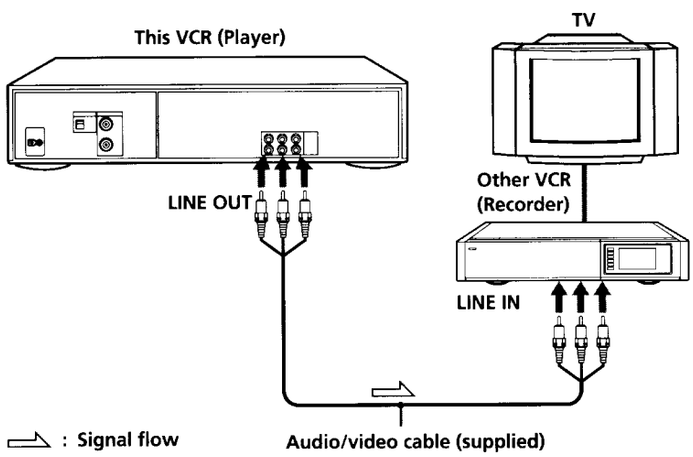
Note

- When connecting the VCRs, do not simultaneously connect the LINE IN and LINE OUT jacks on your VCR. A humming noise may occur if you do this.

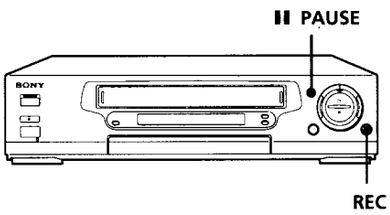
How to hook up to record on this VCR



How to hook up to record to another VCR



Operation (when recording on this VCR)



Before you start editing

- Press INPUT SELECT to display "L" in the display window.
- Press TAPE SPEED to select the recording tape speed (SP/EP).

1 **Insert a source tape with its safety tab removed into the other (playback) VCR. Search for the point to start playback and set it to playback pause.**

2 **Insert a tape into this (recording) VCR. Search for the point to start recording and press II PAUSE.**

3 **Press ● REC on this VCR and set it to recording pause.**

4 **To start editing, press the II PAUSE buttons on both VCRs to release the VCRs from pause.**
For best results, press the pause button on the other VCR just before pressing II PAUSE on this VCR.

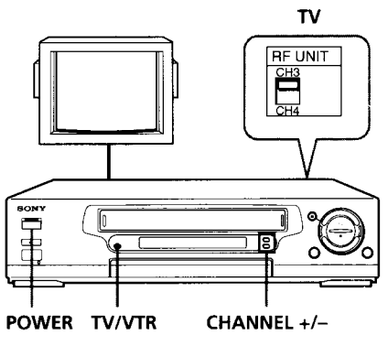
To stop editing
Press the ■ STOP buttons on both VCRs.

Tips

- To release the VCRs from pause, use the II PAUSE buttons on the VCRs so that you can edit more precisely.
- To cut out unwanted scenes while editing, press II PAUSE on this VCR when an unwanted scene begins. When it ends, press II PAUSE again to resume recording (Assemble Editing).

Additional Information

General setup information



Setting the RF unit

When connecting the VCR to the TV using only the antenna cable, you must set the RF UNIT switch on the rear of the VCR so that the TV can receive the correct signal from the VCR.
If you connect the VCR to the TV using the supplied audio/video cable, you can skip this step.

1 Set the RF UNIT switch on the rear of the VCR to CH3 or CH4, whichever channel is not used in your area. If both are used, set the switch to either channel.

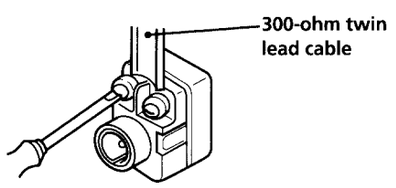
2 Press POWER to turn on the VCR.

3 Press TV/VTR to turn on the VTR indicator in the VCR's display window.

4 Press CHANNEL +/– to display a channel number in the display window. Select an active channel number in your area.

5 Turn on your TV and set it to the channel you selected in step **1** (channel 3 or 4).
The selected TV channel broadcast appears on the TV screen. If the channels change when you press CHANNEL +/–, you have made the correct setting.
Whenever you use the VCR, set the TV to the channel selected in step **1**.

Attaching the external antenna connector



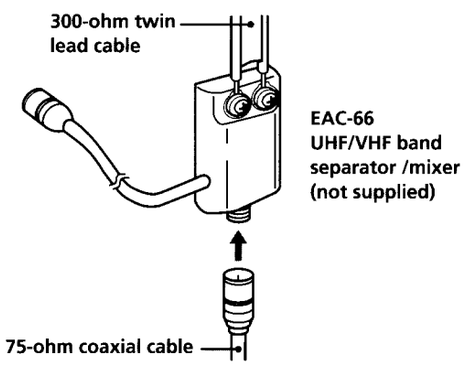
When using a 300-ohm twin lead cable for VHF/UHF antenna, use the EAC-32 antenna connector (not supplied) to connect the antenna to the VCR.

1 Loosen the screws on the antenna connector.

2 Wind the twin leads around the screws on the antenna connector.

3 Retighten the screws.

Attaching an UHF/VHF band mixer



When using both 75-ohm coaxial cable and 300-ohm twin lead cable for VHF/UHF antenna, use the EAC-66 UHF/VHF band separator/mixer (not supplied) to connect the antenna to the VCR.

1 Loosen the screws on the mixer.

2 Wind the twin leads around the screws on the mixer.

3 Retighten the screws.

4 Connect the 75-ohm coaxial cable to the mixer.

Troubleshooting

	Symptom	Remedy
Power	The POWER switch does not function.	• Connect the AC power cord securely.
	The power is turned on but the VCR does not operate.	• Moisture condensation occurs. Turn the power off, unplug the AC power cord and leave the VCR to dry for over an hour.
Clock	The clock has stopped and "–:– –" lights in the display window.	• The clock stops if the VCR is disconnected from the wall outlet for more than three hours. Reset the clock (and timer).
Playback	The playback picture does not appear on the TV screen.	• Make sure the TV is set to the channel for the VCR. If you are using a monitor, set it to video input.
	The picture is not clear.	• Adjust the tracking with the TRACKING NORMAL/SLOW buttons. • The video heads are dirty (see below). Clean the video heads using the Sony T-25CL video head cleaning cassette. If this cleaning cassette is not available in your area, have the heads cleaned at your nearest Sony service facility (a standard service charge will be required.) Do not use a commercially available wet-type cleaning cassette, as it may damage the video heads. • The video heads may have to be replaced. Consult your local Sony dealer for more information.
	The picture rolls vertically during picture search.	• Adjust the vertical hold control on the TV or monitor.
	The picture has no sound.	• The tape is defective. Use a new tape.
	Both main and SAP sounds are heard.	• When you play a bilingual tape, make sure the AUDIO MIX option in the ADVANCED OPTIONS is set to OFF.

Symptoms caused by contaminated video heads

(continued)

• Normal picture • Rough picture • Unclear picture • No picture (or black & white screen appears)

initial ——————→ terminal

	Symptom	Remedy
Recording	A TV program does not appear on the TV screen.	• Make sure the TV is set to the channel for the VCR. If you are using a monitor, set it to video input.
	TV reception is poor.	• Adjust the TV antenna.
	The tape ejects when you press ● REC.	• Check that the safety tab has not been removed.
	Nothing happens when you press ● REC.	• Make sure the tape has been wound to the beginning. • Select the correct source with the INPUT SELECT button. Select a channel number when recording TV programs; select "L" when recording from other equipment.
	No sound is recorded on the normal audio track.	• When not recording SAP sound, make sure the NORMAL AUDIO option in the ADVANCED OPTIONS is set to MAIN.
Timer recording	The timer does not operate.	• Check that the clock is set. • Make sure a tape has been inserted. • Check that the safety tab has not been removed. • Make sure the tape has been wound to the beginning. • Make sure a program has been set for timer recording. • Make sure your timer settings have not already passed the current time. • Check that the cable box is turned on. • The clock stops if the VCR is disconnected from the wall outlet for more than three hours. Reset the clock and timer.
Others	A tape cannot be inserted.	• Check that a tape isn't already in the tape compartment.
	The remote commander does not function.	• Make sure you are pointing the remote commander at the remote sensor on the VCR. • Replace all the batteries in the remote commander with new ones if they are weak.
	The tracking indicator does not appear on the screen.	• The recording condition of the tape is very poor and tracking cannot be adjusted.
	The VCR needs to be cleaned.	• Clean the cabinet, panel and controls with a dry, soft cloth, or a soft cloth slightly moistened with a mild detergent solution. Do not use any type of solvent, such as alcohol or benzine.

If you have any questions or problems concerning your unit, please consult your nearest Sony dealer.

Specifications

System

Format
VHS NTSC standard

Video recording system
Rotary two-head helical scanning FM system

Video signal
NTSC color, EIA standards

Tape speed
SP: 33.35 mm/s (1 3/8 inches/s)
EP: 11.11 mm/s (7/16 inches/s)
LP: 16.67 mm/s (11/16 inches/s), playback only

Maximum recording/playback time
8 hrs. in EP mode (with T-160 tape)

Fast-forward and rewind time
Approx. 3 min. (with T-120 tape)

Tuner section

Channel coverage
VHF 2 to 13
UHF 14 to 69
CATV A-8 to A-1, A to W, W+1 to W+84

Antenna
75-ohm antenna terminal for VHF/UHF

Inputs and outputs

LINE IN
VIDEO IN, phono jack (1)
Input signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
AUDIO IN, phono jack (2)
Input level: –7.5 dBs (0 dBs = 0.775 Vrms)
Input impedance: more than 47 kilohms

LINE OUT
VIDEO OUT, phono jack (1)
Output signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
AUDIO OUT, phono jack (2)
Standard output: –7.5 dBs
Load impedance: 47 kilohms
Output impedance: less than 10 kilohms

Timer section

Clock
Quartz locked

Timer indication
12-hour cycle

Timer setting
Only for recording 8 programs in one month at max.

Power back-up
Built-in self-charging capacitor
Back-up duration: up to three hours at one time

General

Power requirements
120 V AC, 60 Hz

Power consumption
27 W (max.)

Operating temperature
5°C to 40°C (41°F to 104°F)

Storage temperature
–20°C to 60°C (–4°F to 140°F)

Dimensions
Approx. 430 × 103 × 313 mm (w/h/d)
Approx. ($17 \times 4^{1}/_{8} \times 12^{3}/_{8}$ inches) including projecting parts and controls

Mass
Approx. 5.0 kg (11 lb)

Supplied accessories

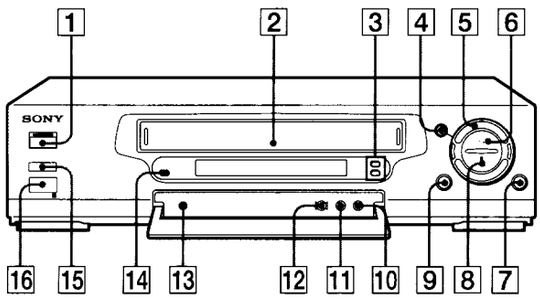
Remote commander (1)
Size AA (R6) batteries (2)
75-ohm coaxial cable with F-type connectors (1)
AC power cord (1)
Audio/video cable (3 phono to 3 phono) (1)

Design and specifications are subject to change without notice.

Index to parts and controls

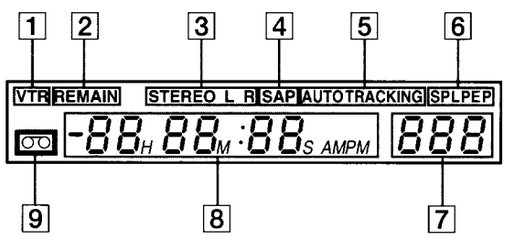
Refer to the pages indicated in ( ) for details.

Front panel



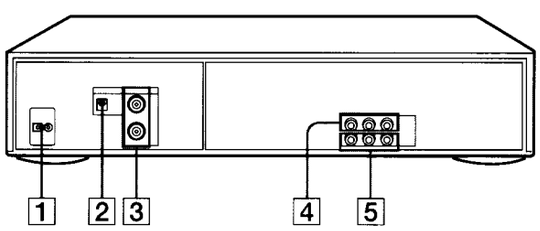
1 POWER switch/indicator
2 Tape compartment
3 CHANNEL button
4 ❚❚ PAUSE button (39)
5 DUAL MODE SHUTTLE ring
6 ▷ PLAY button
7 ● REC (recording) button and indicator (40)
8 ■ STOP button (39)
9 TIMER indicator (31)
10 QUICK TIMER button
11 TAPE SPEED button (26)
12 INPUT SELECT button (39)
13 EASY SET UP button (9, 11, 13, 15)
14 TV/VTR button
15 ⏏ EJECT button
16 Remote sensor (5)

Display window



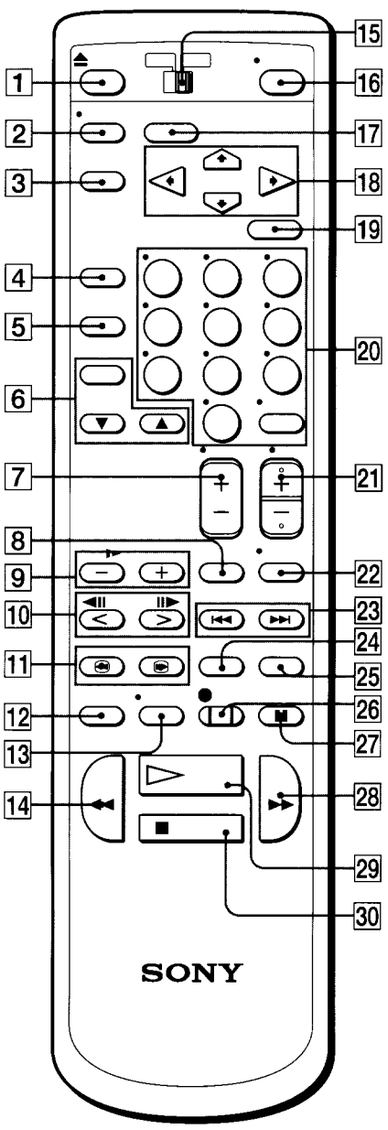
1 VTR indicator (28)
2 REMAIN indicator (24)
3 STEREO L/R indicator (35)
4 SAP indicator (29)
5 AUTO TRACKING indicator (36)
6 Tape speed indicators (26)
7 Line/channel indicator (26)
8 Time counter/remaining time counter/clock (16, 24)
9 Tape indicator

Rear panel



1 AC IN connector
2 RF UNIT switch (40)
3 VHF/UHF connectors (8, 10, 12, 14)
4 LINE IN AUDIO/VIDEO jacks (38)
5 LINE OUT AUDIO/VIDEO jacks (7, 38)

Remote commander



1 ⏏ EJECT button (23)

2 TV/VTR button (28)

3 TIMER CLEAR button (33)

4 COUNTER/REMAIN button (24)

5 COUNTER RESET button (24)

6 TRACKING buttons (36)
AUTO/MAN (manual) button
▼/▲ NORMAL SLOW (STILL ADJUST) buttons

7 VOL (volume) button

8 ×2 button (35)

9 ▮► SLOW buttons (35)

10 ◄▮▮/▮▮► FRAME buttons (35)

11 ⏪/⏩ SEARCH buttons (35)

12 SKIP button (35)

13 DISPLAY button (24)

14 ◄◄ REW(rewind) button (35)

15 TV/VTR remote control switch (5)

16 POWER switch

17 MENU button

18 CURSOR buttons (↑/↓/←/→)

19 EXECUTE button

20 Channel number buttons and ENTER button

21 CH (channel) buttons (26)

22 AUDIO MONITOR button (25)

23 ⏮/⏭ INDEX SEARCH buttons (37)

24 TAPE SPEED button (26)

25 INPUT SELECT button (26, 39)

26 ● REC (recording) button (26)

27 ▮▮ PAUSE button (23)

28 ►► FF (fast-foward) button (35)

29 ▷ PLAY button (23)

30 ■ STOP button (23)

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Quick reference to using the VCR

Hookup 1

To play a tape

1. Set the TV to channel 3 or 4 (or to video input, if you made A/V connections.)
2. Insert a tape and press ▷ PLAY.

To record a program

1. Turn on the cable box.
2. Set the cable box to the channel you want to record.
3. Press MENU and select TIMER SET/CHECK.
4. Set the date, time, cable box output channel, and tape speed.
5. Press EXECUTE.
6. Insert a tape.
7. Press POWER to turn off the VCR.
8. Leave the cable box on.

To watch TV

1. Turn off your VCR, or press the VCR's TV/VTR button until the VTR indicator in the display window goes off.
2. Turn on your cable box.
3. Set the TV to the cable box output channel (usually 2, 3, or 4).
4. Set the cable box to the channel you want to watch.

Hookup 2

To play a tape

1. If you made A/V connections, set the TV to video input.
   If you didn't use A/V hookup:
   - Turn on the cable box.
   - Set the cable box to channel 3 or 4.
   - Set the TV to the output channel of the cable box (usually 2, 3 or 4).
2. Insert a tape and press ▷ PLAY.

To record a program

1. Press MENU and select TIMER SET/CHECK.
2. Set the date, time, channel, and tape speed.
3. Press EXECUTE.
4. Insert a tape.
5. Press POWER to turn off the VCR.

To watch TV

1. Turn off the VCR, or press the VCR's TV/VTR button until the VTR indicator in the display window goes off.
2. Select the channel with your cable box (if you have one) or with your TV.

Hookup 3

To play a tape

1. Set the TV to channel 3 or 4 (or to video input, if you made A/V connections.)
2. Insert a tape and press ▷ PLAY. If there's no picture on your TV, press the VCR's TV/VTR button until the VTR indicator comes on in the display window.

To record a program

1. Press MENU and select TIMER SET/CHECK.
2. Set the date, time, channel, and tape speed.
3. Press EXECUTE.
4. Insert a tape.
5. Press POWER to turn off the VCR.

To watch TV

1. Turn off the VCR, or press the VCR's TV/VTR button until the VTR indicator in the display window goes off.
2. Set the TV to the channel you want to watch.

Hookup 4

To play a tape

1. Set the TV to channel 3 or 4 (or to video input, if you made A/V connections).
2. Insert a tape and press ▷ PLAY.

To record an unscranbled channel

1. Set the A/B switch to "A".
2. Press MENU and select TIMER SET/CHECK.
3. Set the date, time, channel, and tape speed.
4. Press EXECUTE.
5. Insert a tape.
6. Press POWER to turn off the VCR.

To record a scrambled channel

1. Set the A/B swtch to "B".
2. Turn on the cable box.
3. Set the cable box to the channel you want to record.
4. Press MENU and select TIMER SET/CHECK.
5. Set the date, time, cable box output channel, and tape speed.
6. Press EXECUTE.
7. Insert a tape.
8. Press POWER to turn off the VCR.
9. Leave the cable box on.

To watch TV

1. Turn off your VCR, or press the VCR's TV/VTR button until the VTR indicator in the display window goes off.
2. Set the A/B swtch to "B".
3. Turn on your cable box..
4. Set the TV to the cable box output channel (usually 2, 3 or 4).
5. Set the cable box to the channel you want to watch.

If you have any questions about this product, you may call: **Sony Customer Information Center** 1-800-222-SONY (7669)
or write to: **Sony Customer Information Center** Sony Drive, Mail Drop #T1-11, Park Ridge, NJ 07656

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